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HARRY TWYFORD PETERS

EARLY FIELD LITERATURE.

Editor Forest and Stream:

I have the first volume of the *Cabinet**, one of the earliest publications of its kind in the United States—which I think must be rare, as it was not very liberally supported, and only reached the second volume, as I believe. This volume was rescued from the great Chicago fire of 1871, where Vol. II. was consumed.

Thomas Doughty, one of the publishers, was a well-known landscape painter of that day, and most of the illustrations of the work were from his pencil on stone, and are very good; they are in colors, and are, I think, equal to those of Audubon and Bachman. The Virginia deer, the ruffed grouse, the quail and the woodcock were drawn from nature by Doughty, and are very lifelike and spirited. So is the drawing of the bighorn or mountain sheep, which he calls the American argali; at that time little known, and supposed to be the same as the argali of Central Asia.

To show how far away from the modern sportsman the year 1830 was, I find in this work an elaborate defense of the percussion lock, as against the older flint and steel, which some conservative men of the period argued to be superior to the new invention both in range and penetration. I myself well remember the discussion which ran through the sporting papers of the day; and now the percussion lock is itself superseded by the breechloader, and that is contending against the hammerless.

A writer in the *Cabinet* gives an account of grouse shooting in Pennsylvania, in which two sportsmen killed fourteen brace of pinnated grouse in two days. Even then these birds were scarce, and the writer wisely declines giving the scene of the exploit.

On June 22, 1831, a pigeon match for $500 a side was shot between two men of Philadelphia and two from New Jersey. Philadelphia, 15, 19—34. New Jersey, 17, 15—32. It is not stated whether flint or percussion guns were used.

Even as early as 1831 there was a scarcity of quail about New York, and the sportsmen of that city were arranging to buy and protect through the winter 3,000 of those birds.

An angling club was formed in Cincinnati in 1830, the proceedings of which are described. The meeting took place at Whitewater, twenty miles northwest of the city. About fifteen members angled there for one and a half days with rod and reel and took 353 black bass and salmon (pike-perch). The largest bass was taken by the president of the club, and it weighed 5lbs. 2oz., and was the largest bass ever taken by any angler from the waters of the Miami. This seems to show that the size of black bass has not diminished in fifty-eight years. The writer goes on to describe the black bass and the sport of taking it. His account reads like a chapter of Dr. Henshall's book, except that in 1831 the minnow was used exclusively. The present writer was one of the first to take black bass with the fly; this was in Wisconsin, about 1841.

Fly-fishing for trout is treated in the *Cabinet* and the article is illustrated by two colored drawings of red-spotted and silver trout, done by a lady. At that time the big trout of Maine and the Lake Superior country were little known, and a pound trout was considered a prize. I have heard anglers disputing whether such a fish as a three-pound trout existed. This, however, was in New England, where brook trout were plenty, but small.

I find nothing about trotting in the *Cabinet*, but a running race for a purse of $10,000 was run at Norfolk, Va., on Nov. 2, 1831. Two-mile heats, won by W. R. Johnson's Annette, in two heats, 3:47½ and 3:50. The next day a race for $4,000, on the same course, won by Doswell's Sally Hornet, four miles in 7:55 and 8:13. W. R. Johnson was the leading turfman of that day, usually called the "Emperor of the Turf." I saw this same mare Annette in 1832 win a three-mile race in Charleston, S. C., and Johnson's famous gray mare, Bonnets of Blue, win a great four-mile race at the same meeting, against Col. Singleton's Clara Fisher, for $5,000, in 7:45. In those days a horse which could trot a mile in 2:30 was considered a wonder. So that within fifty years the trotting record has been cut down twenty seconds to the mile, and the running record of four miles from 7:45 to 7:20, twenty-five seconds, this time having been made by both Fellowcraft and Lexington.

S. C. C.

*"The Cabinet of Natural History and American Field Sports," Vol. I., Philadelphia, J. & T. Doughty, 1830.

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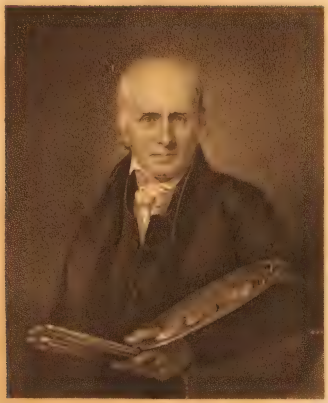

C. W. Peale

THE

CABINET

of

Natural History

AND

American Rural Sports

with

ILLUSTRATIONS.

Vol. I

Philadelphia Published by

A. Hoogland

1830

BIOGRAPHICAL SKETCH

OF

CHARLES WILLSON PEALE.

The records of Natural History and of the Fine Arts in this country would be incomplete, without some notice of a man who was among the earliest to cultivate a taste for Painting, and the first to establish a Museum of Natural History, even when the name of Museum was scarcely recognized from the European dictionaries. It would require more time than we can now bestow, to perform this duty with the minuteness which might be desired. We will, therefore, content ourselves with a slight sketch of his varied career.

His father, Charles Peale, is still remembered by some of the oldest inhabitants of Maryland as a gentleman of liberal education and polite manners; greatly respected as a teacher at Chestertown, where he occasionally officiated in the pulpit, when the clergyman of the parish happened to be absent. He was a native of Rutlandshire in England; proud of the freedom which Britons enjoyed, but still prouder of the advantages which he foresaw were to be developed here. He died in the year 1750, leaving a widow and five children, of whom the eldest was Charles Willson, the subject of the present memoir; Margaret Jane, who first married a British officer, afterwards Colonel Nathaniel Ramsay; St. George, who was distinguished as the head of the Land Office; Elizabeth Digby, who married Captain Polk; and James, who has been long distinguished as a painter of miniatures and still life.

Charles Willson Peale was born at Chestertown, on the eastern shore of Maryland, April 16th, 1741. At an early age he was bound apprentice to a saddler in Annapolis; and the habits of industry which he acquired under the obligations of that servitude, gave a character to the labours of his whole life, to which was added a perseverance from his own peculiar temperament, which seemed to delight in conquering difficulties.

He was married before he was twenty-one years of age, and for several years carried on the business of his apprenticeship; to which he successively added coach, clock and watch making, and something of the silversmith business. But this variety of occupation, though it amused the eager and volatile fancy of a youth of very sanguine temperament, instead of advancing his interest, only accumulated around him embarrassments which distressed him for a long time.

Hitherto he had thought but little of drawing; yet he had copied some prints with a pen and ink, had coloured prints on glass, and even painted an Adam and Eve from the inspiration of Milton. It was on a visit to Norfolk, where he went to purchase leather, that seeing a portrait and some landscapes painted by a Mr. Frazier,—instead of being stimulated by a display of excellence to aspire to excellence in art—it was the badness of the performances which encouraged him in the idea of surpassing them. He therefore secretly procured some pigments and canvass from a coach maker, and soon surprised his friends by a landscape and portrait of himself, in which he was represented holding a palette and brushes in his hand, with a clock in the background. He never could remember to whom he had given this portrait, or where it had been mislaid, till forty years afterwards, it was discovered tied up as a bag, and containing a pound or two of whiting; having travelled, unopened, during the revolutionary struggles, from place to place. This picture immediately drew him into notice, and procured him employment, still further to the disadvantage of his original business.

His mind was now wholly bent on painting, and it was necessary to procure the proper materials for it. He had never seen an easel or palette, and knew only the most common colours which the coach painters then used. For this purpose he travelled to Philadelphia, which was then a journey of some fatigue and peril; and in the well furnished shop of Christopher Marshall, was bewildered by the variety of colours, the names of which he had never before heard. Some book on painting might relieve him from this embarassment, and Rivington's bookstore furnished him with the "Handmaid to the Arts." This, in the solitude of his lodgings, he studied day and night for nearly a week, before he could venture upon the selection and purchase of

his paints, with which he hastened back to Annapolis, eager to commence.

Previous to this, there had been only three persons in Maryland, professing the art of portrait painting: Cain, Hesselius, and Woolaston. They were artists from the parent country, who had made profitable circuits through the colonies, furnishing to the most wealthy families laudable portraits and groups in the style of the courtly Kneller. Mr. Hesselius, however, had married an American lady, and was living near Annapolis. To him our young artist looked for the benefit of instruction; and taking with him as a present one of his finest saddles, requested to see him paint a picture. Thus instructed, he succeeded in painting the portraits of several of his friends, much to their gratification and pleasure to himself, but little to the advantage of his neglected saddlery.

Tempted by an offer of his brother in law, Captain Polk, he accompanied him in his schooner to Boston, where he became acquainted with Mr. Copley, who received him kindly and lent him a picture to copy. The sight of Mr. Copley's picture room afforded him great enjoyment and instruction. He returned with increased knowledge, and was patronized by Mr. Arbunkle, whose family he had painted; besides several neighbours in Virginia. On his return to Annapolis it was decided by his friends that he must go to England, and several gentlemen very liberally subscribed to raise a fund for that purpose, to be repaid by paintings on his return, which enabled him to undertake the voyage to London, furnished with letters of recommendation Mr. West, Mr. Jennings, and others.

Mr. West received him with the greatest kindness, and freely gave him instructions in drawing and painting. From an Italian he learned to model in wax; Mr. Flaxman senior, instructed him in the art of moulding and casting plaister figures. But when he had been more than a year in London, and his diminished funds reminded him of returning to America, Mr. West earnestly persuaded him to remain another year, kindly offering him a residence in his own house. Additional remittances from America, and some portraits which he painted in London, through the recommendations of Mr. Jennings, enabled him to prolong his stay; during which he made great improvement in oil painting, learned to paint in miniature, and executed some mezzotinto engravings. At this time Stuart and Trumbull were likewise students with Mr. West.

On his return to America, he found constant employment at portrait painting, both in Annapolis and Baltimore. Here he invited his brothers St. George and James to join his family, and instructed them, as well as his sisters, in drawing and painting. To commemorate this happy groupe, he painted the large family piece which is in the Philadelphia Museum, to which, in his old age, he added a faithful mastiff. In several visits which he had paid to Philadelphia, having found employment, he determined to settle there, which he did in the year 1776; but the increasing troubles, produced by the contest with the parent country, excited his patriotism to join in popular meetings, where he was distinguished for his ardour. He raised a company of volunteers, which elected him their captain. With them he sought the army of General Washington, and was engaged in the battles of Trenton and Germantown; his family having retired from Philadelphia into the country, enduring many privations.

In camp he painted the portraits of several distinguished officers, which was the commencement of his invaluable Gallery of American characters; and it was at the moment he was painting a miniature of General Washington at a small farm-house in New Jersey, a letter was received announcing the surrender of Cornwallis. Mr. Peale had his table and chair near the window, and Washington was sitting on the side of a bed; the room being too small for another chair. His aid-de-camp, Colonel Tilghman, was present. It was an interesting moment; but the sitting was continued, as the miniature was intended for Mrs. Washington.

Notwithstanding his fondness for the peaceful employment of the pencil, he was influenced by the spirit of the times to join in public meetings, where, being often chairman, he was drawn into notice, and appointed to offices of great responsibility. In 1779 he represented Philadelphia in the Legislative Assembly, and zealously co-operated in passing the law for the abolition of slavery. But he ever afterwards forbore meddling with politics, and scrupulously confined his attention to painting, mechanical inventions and occupations. At this time he was much employed, being, for about fifteen years, the only portrait painter in the western world.

In the year 1785, the idea of making a Museum of Natural History first occurred to him. It was suggested by some bones of the Mammoth which were brought to him to make drawings from them, and were placed in his picture gallery, which contained a valuable and increasing collection of portraits of characters distinguished in the revolutionary struggles. This new pursuit soon engrossed all his thoughts, and furnished a never-ending occupation for all his industry, ingenuity, and perseverance. Unacquainted with the European modes of proceeding, he had every thing to discover; and years elapsed before he could succeed in preserving his specimens of animals from the depredations of insects. The writer of this article has seen hundreds of birds and beasts, when better specimens were prepared, burnt in piles—a sacrifice on the altar of experience. Many

citizens and strangers contributed to enlarge his collection, and, in a few years, his picture gallery, at the corner of Lombard and Third streets, after several enlargements, was found to be too small for his Museum. It was then removed to the Philosophical Hall, and there was greatly augmented, especially with the skeleton of the Mammoth,* which was discovered in Ulster county, N. York State, and disinterred at great expense and labour. Thus, a few bones of the Mammoth accidentally suggested the idea of a Museum, which, subsequently furnished its founder with the means of procuring and displaying to the world the first skeleton of that antediluvian wonder, since classified under the name of Mastadon; which, in its turn contributed to give character and value to a Museum that now ranks on an equality with the most celebrated of Europe, founded and supported as they are, by the wealth of powerful governments.

Hitherto no person in America had presented the subject of Natural History in the attractive shape of lectures. With the view of combining the result of his own observations and discoveries, with the facts and observations that were to be found scattered in various European works, Mr. Peale delivered at the Museum a course of lectures at once popular and scientific, which were attended by the most

* In the spring of 1801, receiving information from a scientific correspondent in the State of New York, that in the autumn of 1799 many bones of the Mammoth had been found in digging a marle-pit in the vicinity of Newburgh, which is situated on the river Hudson, sixty-seven miles from the city of New York, my father, Charles Willson Peale, immediately proceeded to the spot, and through the politeness of Dr. Graham, whose residence on the banks of the Wall-kill enabled him to be present when most of the bones were dug up, received every information with respect to what had been done, and the most probable means of future success. The bones that had been found were then in the possession of the farmer who discovered them, heaped on the floor of his garret or granary, where they were occasionally visited by the curious. These my father was fortunate to make a purchase of, together with the right of digging for the remainder, and, immediately packing them up, sent them on to Philadelphia. They consisted of all the neck, most of the vertebræ of the back, and some of the tail; most of the ribs, in greater part broken; both scapulæ; both humeri, with the radii and ulnæ; one femur; a tibia of one leg, and a fibula of the other; some large fragments of the head; many of the fore and hind feet bones; the pelvis, somewhat broken; and a large fragment, five feet long, of one tusk, about mid-way. He therefore was in want of some of the back and tail bones, some of the ribs, the under jaw, one whole tusk and part of the other, the breast bone, one thigh, and a tibia and fibula, and many of the feet bones. But as the farmer's fields were then in grain, the enterprise of further investigation was postponed for a short time.

The whole of this part of the country abounding with morasses, solid enough for cattle to walk over, containing peat, or turf, and shell-marle, it is the custom of the farmers to assist each other, in order to acquire a quantity of the marle for manure. Pits are dug generally twelve feet long and five feet wide at the top, lessening to three feet at the bottom. The peat or turf is thrown on lands not immediately in use; and the marle, after mellowing through the winter, is in the spring scattered over the cultivated fields—the most luxuriant crops are the consequence. It was in digging one of these, on the farm of John Masten, that one of the men, thrusting his spade deeper than usual, struck what he supposed to be a log of wood, but on cutting it to ascertain the kind, to his astonishment, he found it was a bone: it was quickly cleared from the surrounding earth, and proved to be that of the thigh, three feet nine inches in length, and eighteen inches in circumference, in the smallest part. The search was continued, and the same evening several other bones were discovered. The fame of it soon spread through the neighbourhood, and excited a general interest in the pursuit: all were eager, at the expense of some exertions, to gratify their curiosity in seeing the ruins of an animal so gigantic, of whose bones very few among them had ever heard, and over which they had so often unconsciously trod. For the two succeeding days upwards of an hundred men were actively engaged, encouraged by several gentlemen, chiefly physicians of the neighbourhood, and success the most sanguine attended their labours: but, unfortunately, the habits of the men requiring the use of spirits, it was afforded them in too great profusion, and they quickly became so impatient and unruly, that they had nearly destroyed the skeleton; and, in one or two instances, using oxen and chains to drag them from the clay and marle, the head, hips, and tusks were much broken; some parts being drawn out, and others left behind. So great a quantity of water, from copious springs, bursting from the bottom, rose upon the men, that it required several score of hands to lade it out, with all the milk-pails, buckets, and bowls, they could collect in the neighbourhood. All their ingenuity was exerted to conquer difficulties that every hour increased upon their hands; they even made and sunk a large coffer-dam, and within it found many valuable small bones. The fourth day so much water had risen in the pit, that they had not courage to attack it again. In this state we found it in 1801.

It was a curious circumstance attending the purchase of these bones, that the sum which was paid for them was little more than one-third of what had been offered to the farmer for them by another, and refused, not long before. This anecdote may not be uninteresting to the moralist, and I shall explain it. The farmer of German extraction—and like many others in America, speaking the language of his fathers better than that of his country—was born on his farm; he was brought up to it as a business, and it continued to be his pleasure in old age; not because it was likely to free him from labour, but because profit, and the prospect of profit, chee d him in it, until the end was forgotten in the means. Intent upon manuring his lands to increase its production, (always laudable), he felt no interest in the fossil-shells contained in his morass; and had it not been for the men who dug with him, and those whose casual attention was arrested, or who were drawn by report to the spot, for him the bones might have rotted in the hole in which he discovered them; this he confessed to me would have been his conduct, certain that after the surprise of the moment they were good for nothing but to rot as manure. But the learned physician, the reverend divine, to whom he had been accustomed to look upwards, gave importance to the objects which excited the vulgar stare of his more inquisitive neighbours: he therefore joined his exertions to theirs, to recover as many of the bones as possible. With him, hope was every thing; with the men curiosity did much, but rum did more, and some little was owing to certain prospects which they had of sharing in the future possible profit. It is possible he might have encouraged this idea; his fear of it, however, seems to have given him some uneasiness; for when he was offered a small sum for the bones, it appeared too little to divide; and when a larger sum, he fain would have engrossed the whole of it, or persuade himself that the real value might be something greater. Ignorant of what had been offered him, my father's application was in a critical moment, and the farmer accepted his price, on condition that he should receive a new gun for his son, and new gowns for his wife and daughters, with some other articles of the same class. The farmer was glad they were out of his granary, and that they were in a few days to be two hundred miles distant; and my father was no less pleased with the consciousness, and on which every one complimented him, that they were in the hands of one who would spare no exertions to make the best use of them. The neighbours,

distinguished citizens, of both sexes, who enjoyed the opportunity of seeing the objects which they heard explained.

But it was not sufficient that he had written these lectures; they must be delivered by himself; a task, the difficulty of which was increased by the recent loss of some of his front teeth. His ingenuity was soon at work to supply this deficiency, and with remarkable perseverance he succeeded, first in ivory, and finally in making complete sets

who had assisted the farmer in this discovery, envious of his good fortune, sued him for a share in the profit; but they gained nothing more than a dividend of the costs; it appearing that they had been satisfied with the gratification of their curiosity, and the quality and quantity of the rum; no one could prove that he had given them reason to hope for a share in the price of any thing his land might happen to produce.

Not willing to lose the advantage of an uncommonly dry season, when the springs in the morass were low, we proceeded on the arduous enterprise. In New York every article was provided which might be necessary in surmounting expected difficulties; such as a pump, ropes, pullies, augers, &c.; boards and plank were provided in the neighbourhood, and timber was in sufficient plenty on the spot.

Confident that nothing could be done without having a perfect command of the water, the first idea was to drain it by a ditch; but the necessary distance of perhaps half a mile, presented a length of labour that appeared immense. It was therefore resolved to throw the water into a natural basin, about sixty feet distant, the upper edge of which was about ten feet above this level of the water. An ingenious millwright constructed the machinery, and, after a week of close labour, completed a large scaffolding and a wheel twenty feet diameter, wide enough for three or four men to walk a-breast in: a rope round this turned a small spindle, which worked a chain of buckets regulated by a floating cylinder; the water thus raised, was emptied into a trough, which conveyed it to the basin; a ship's pump assisted, and, towards the latter part of the operation, a pair of half barrels, in removing the mud. This machine worked so powerfully, that in the second day the water was lowered so much as to enable them to dig; and in a few hours they were rewarded with several small bones.

The road which passed through this farm was a highway, and the attention of every traveller was arrested by the coaches, wagons, chaises, and horses, which animated the road, or were collected at the entrance of the field: rich and poor, men, women, and children, all flocked to see the operation; and a swamp always noted as the solitary abode of snakes and frogs, became the active scene of curiosity and bustle: most of the spectators were astonished at the purpose which could prompt such vigorous and expensive exertions, in a manner so unprecedented, and so foreign to the pursuits for which they were noted. But the amusement was not wholly on their side; and the variety of company not only amused us, but tended to encourage the workmen, each of whom, before so many spectators, was ambitious of signalizing himself by the number of his discoveries.

For several weeks no exertions were spared, and the most unremitting were required to insure success; bank after bank fell in; the increase of water was a constant impediment, the extreme coldness of which benumbed the workmen. Each day required some new expedient, and the carpenter was always making additions to the machinery; every day bones and pieces of bones were found between six and seven feet deep, but none of the most important ones. But the greatest obstacle to the search was occasioned by the shell marle which formed the lower stratum; this rendered thin by the springs at the bottom, was, by the weight of the whole morass, always pressed upwards on the workmen to a certain height, which, without an incalculable expense, it was impossible to prevent. Twenty-five hands at high wages were almost constantly employed at work which was so uncomfortable and severe, that nothing but their anxiety to see the head, and particularly the under jaw, could have kept up their resolution. The patience of employer and workmen was at length exhausted, and the work relinquished without obtaining those interesting parts, the want of which rendered it impossible to form a complete skeleton.

It would not have been a very difficult matter to put these bones together, and they would have presented the general appearance of the skeleton; but the under jaw was broken to pieces in the first attempt to get out the bones, and nothing but the teeth and a few fragments of it were now found; the tail was mostly wanting, and some toe-bones. It was, therefore, a desirable object to obtain some knowledge of these deficient parts, but if possible to find some other skeleton in such order as to see the position, and correctly to ascertain the number of the bones. In the course of eighteen years there had been found within twelve miles of this spot, a bone or two in several different places; concerning these we have made particular inquiries, but found that most of the morasses had been since drained, and consequently either the bones had been exposed to a certain decay; or else so deep, that a fortune might have been spent in the fruitless pursuit. But through the polite attention of *Dr. Galatan*, we were induced to examine a small morass, eleven miles distant from the former, belonging to Capt. J. Barber, where, eight years before, four ribs had been found in digging a pit. From the description which was given of their position, and the appearance of the morass, we began our operations with all the vigour a certainty of success could inspire. Nearly a week was consumed in making a ditch, by which all the water was carried off, except what a hand-pump could occasionally empty: the digging, therefore, was less difficult than that at Masten's, though still tedious and unpleasant; particularly as the sun, unclouded as it had been for seven weeks, poured its scorching rays on the morass, so circumscribed by trees, that the western breeze afforded no refreshment; yet nothing could exceed the ardour of the men, particularly of one, a gigantic and athletic negro, who exulted in choosing the most laborious tasks, although he seemed melting with heat. Almost an entire set of ribs were found, lying nearly together, and very entire; but as none of the back bones were found near them (a sufficient proof of their having been scattered) our latitude for search was extended to very uncertain limits; therefore, after working about two weeks, and finding nothing belonging to the head but two rotten tusks, (part of one of them is with the skeleton here) three or four small grinders, a few vertebræ of the back and tail, a broken scapula, some toe-bones, and the ribs, found between four and seven feet deep—a reluctant terminating pause ensued.

These bones were kept distinct from those found at Masten's, as it would not be proper to incorporate into one skeleton any other than the bones belonging to it; and nothing more was intended than collate the corresponding parts. These bones were chiefly valuable as specimens of the individual parts; but no bones were found among them which were deficient in the former collection, and therefore our chief object was defeated. To have failed in so small a morass was rather discouraging to the idea of making another attempt; and yet the smallness of the morass was, perhaps, the cause of our failure, as it was extremely probable the bones we could not find were long since decayed, from being situated on the rising slope at no considerable depth, unprotected by the shell-marle, which lay only in the lower part of the basin forming the morass. When every exertion was given over, we could not but look at the surrounding unexplored parts with some concern, uncertain how near we might have been to the discovery of all that we wanted, and regretting the probability that, in consequence of the drain we had made, a few years would wholly destroy the venerable objects of our research.

Almost in despair at our failure in the last place, where so much was expected, it was with very little spirit we mounted our horses, on another inquiry. Crossing the Wall-kill at the falls, we ascended over a double swelling hill into a rudely cultivated country, about twenty miles west from the Hudson, where, in a thinly settled neighbourhood, lived the honest farmer Peter Millspaw, who, three years before, had discovered several bones: from his log-hut he accompanied us to the morass. It was impossible to resist the

of porcelain teeth, not only for himself, but for his friends and others, at a time when no other person in the United States had succeeded in the attempt.

About the period when the Museum was commenced, Loutherburg in London had got up an exhibition of transparent paintings with moveable effects. A description of these excited an irresistible desire to effect the same purposes. Here was a vast field opened for his taste and invention; for his labour day and night, and his morning dreams. At length, the public in crowds witnessed, at the end of his long gallery of portraits, these magic pictures. A perspective view of Market street, gradually darkening into the gloom of night. The street lamps are successively lighted and sparkle in the diminishing perspective; the clouds disperse and the pale moon rises. Another picture represented a prospect in the country, dimly seen at night; —the cock crows, the horizon brightens gradually into the glow of sunrise, gay with the chirping of birds which fly from tree to tree;—presently the clouds arise, thick and dark, till brightened on their varying edges by the lightning's flash, accompanied by the roll of thunder;—the rain begins to fall, increasing to a heavy shower; but it clears away and exhibits a splendid rainbow which commences and dies away gradually. Other pieces admirably represented the battle between the Bon Homme Richard, commanded by Paul Jones and the British frigate Serapis; and the gorgeous display of the temple of Pandemonium.

Many years before this, an attempt was made to found an Academy of the Fine Arts by the few artists who found occupation in Philadelphia, chiefly engravers, with Mr. Rush the carver, and some foreign artists then sojourning with us. Landscape and miniature painters, and with them the

solemnity of the approach to this venerable spot, which was surrounded by a fence of safety to the cattle without. Here we fastened our horses, and followed our guide into the centre of the morass, or rather marshy forest, where every step was taken on rotten timber and the spreading roots of tall trees, the luxuriant growth of a few years, half of which were tottering over our heads. Breathless silence had here taken her reign amid unhealthy fogs, and nothing was heard but the fearful crash of some mouldering branch or towering beach. It was almost a dead level, and the holes dug for the purpose of obtaining manure, out of which a few bones had been taken six or seven years before, were full of water, and connected with others containing a vast quantity; so that to empty one was to empty them all; yet a last effort might be crowned with success; and, since so many difficulties *had been* conquered, it was resolved to embrace the only opportunity that now offered for any farther discovery. Machinery was accordingly erected, pumps and buckets were employed, and a long course of troughs conducted the water among the distant roots to a fall of a few inches, by which the men were enabled, unmolested, unless by the caving in of the banks, to dig on every side from the spot where the first discovery of the bones had been made.

Here alternate success and disappointment amused and fatigued us for a long while; until, with empty pockets, low spirits, and languid workmen, we were about to quit the morass with but a small collection, though in good preservation, of ribs, toe, and leg bones, &c. In the meanwhile, to leave no means untried, the ground was searched in various directions with long-pointed rods and cross-handles: after some practice we were able to distinguish by feeling, whatever substances we touched harder than the soil; and by this means, in a very unexpected direction, though not more than twenty feet from the first bones that were discovered, struck upon a large collection of bones which were dug to and taken up, with every possible care. They proved to be a humerus, or large bone of the right leg, with the radius and ulna of the left, the right scapula, the atlas, several toe-bones, and the great object of our pursuit, a complete UNDER JAW!

After such a variety of labour and length of fruitless expectation, this success was extremely grateful to all parties, and the unconscious woods echoed with the repeated huzzas, which could not have been more animated if every tree had participated in the joy. "Gracious God, what a jaw! how many animals have been crushed by it!" was the exclamation of all; a fresh supply of grog went around, and the hearty fellows, covered with mud, continued the search with increasing vigour. The upper part of the head was found twelve feet distant, but so extremely rotten that we could only preserve the teeth and a few fragments. In its form it exactly resembled the head found at Masten's; but, as that was much injured by rough usage, this, from its small depth beneath the surface, had the cranium so rotted away as only to show the form around the teeth, and thence extending to the condyles of the neck; the rotten bone formed a black and greasy mould above that part which was still entire, yet so tender as to break to pieces on lifting it from its bed.

This collection was rendered still more complete by the addition of those formerly taken up, and presented to us by Drs. Graham and Post. They were a rib, the sternum, a femur, tibia and fibula, and a patella or knee-pan. One of the ribs had found its way into an obscure farmhouse, ten miles distant, to which we fortunately traced it.

Thus terminated this strange and laborious campaign of three months, during which we were wonderfully favoured, although vegetation suffered, by the driest season which had occurred within eight years. Our venerable relics were carefully packed up in distinct cases; and, loading two wagons with them, we bade adieu to the vallies and stupendous mountains of Shawangunk: so called by their former inhabitants, the Indians of the Lenape tribe. The three sets of bones were kept distinct: with the two collections which were most numerous it was intended to form two skeletons, by still keeping them separate, and filling up the deficiencies in each by artificial imitations from the other, and from counterparts in themselves. For instance, in order to complete the first skeleton, which was found at Masten's, the under jaw was to be modelled from this, which is the only entire one that has yet been discovered, although we have seen considerable fragments of at least ten different jaws; while, on the other hand, in the skeleton just discovered at Barber's, the upper jaw, which was found in the extreme of decay, was to be completed, so far as it goes, from the more solid fragment of the head belonging to the skeleton found at Masten's. Several feet-bones in this skeleton were to be made from that; and a few in that were to be made from this. In this the right humerus being real, the imitation for the left one could be made with the utmost certainty; and the radius and ulna of the left leg being real, those on the right side would follow, of course, &c. The collection of ribs in both cases was almost entire; therefore, having discovered from a correspondence between the number of vertebræ and ribs in both animals, that there were nineteen pair of the latter, it was necessary in only four or five instances to supply the counterparts, by correct models from the real bones. In this manner the two skeletons were formed, and are in both instances composed of the appropriate bones of the animal, or exact imitations from the real bones in the same skeleton, or from those of the same proportion in the other. Nothing in either skeleton is imaginary; and what we have not unquestionable authority for, we leave deficient; which happens in only two instances, the *summit* of the head, and the *end* of the tail.—*Godman's Nat. Hist. by Rembrandt Peale.*

Italian Sculptor Ceracchi (who afterwards conspired against the life of Buonaparte). Among these Mr. Peale was the only portrait painter in oil. At his house the meetings were held, and the conversations were often interesting under all the excitements of imagination and genius; but they ended in a separation into two unproductive parties; the native artists contented with a school of art, and the foreigners swelling with a mighty scheme of a national Academy.

In the year 1794 another experiment was made at Mr. Peale's—an academy was formed; some plaister casts were collected, and arrangements were made to draw from the life. When the person (a baker) who was engaged to stand as the model, found himself surrounded by new faces and penetrating eyes, he shrunk from the scrutiny, and precipitately fled. In this dilemma Mr. Peale stripped and presented himself as the model to his fellow artists. An exhibition was likewise got up, intended to be annual. It was opened in the Hall of Independence; comprised a very respectable display of pictures, chiefly lent by private gentlemen, and was well attended by the public.

It was not until 1810 that a foundation could be laid for a permanent Academy. Again the amateurs of the Arts were invited to meet at Mr. Peale's; but their number was so small, and their influence over the public mind so limited, that nothing but the most zealous exertions of Mr. Joseph Hopkinson could have availed in procuring the funds which were necessary to erect a suitable building, and to import from Europe the requisite plaister casts. Mr. Peale and his son, who was recently from Europe, laboured incessantly to mend and display these objects, and to organize the drawing academies. He lived to see and contribute to seventeen annual exhibitions.

Early rising, temperate repasts, and industrious habits, had invigorated his constitution, and he had reached his eighty-fifth year with but little interruption to his health, and pleasantly talked of living to be at least a hundred years old. The manner of his death was strictly accordant with the peculiarities of his life; for it was not so much the consequence of old age as of too much youth, in imprudently carrying his own trunk to get up with a stage which he feared would leave him behind. This induced a violent palpitation and disorder of his heart, from which he had scarcely recovered, when he indiscreetly mounted the highest ladder at the new building of the Arcade, the upper rooms of which were being constructed to hold his Museum. This brought on a relapse and his speedy and lamented death, in 1827; leaving his Museum as a joint stock to his children; Raphael, Angelica Kaufman, Rembrandt, Rubens, Sophonisba Carriera, Linnæus, Franklin, Sybilla, Meriam, Elizabeth, and Titian.

Few men have passed through a greater variety of scenes and occupations. Perhaps in the organization of his mind there was too great a propensity to indulge in every novel occupation; certainly there was a peculiarity of fancy which controlled him in these enjoyments; he loved to do what nobody around him could do, and exhibited the most extraordinary industry, perseverance, and ingenuity to accomplish his purposes. His chief delight, though of a cheerful and social temper, was to find himself alone in the trackless ocean of experiments, contending with the rough elements and surmounting difficulties as they followed in successive waves never sinking, never despairing. At first a saddler, harness and coach maker; then a silversmith and watchmaker; it was not till his 26th year that his eyes opened to the boundless fields of art; but in this pursuit he mingled the greatest variety, painting in oil, in crayons, and in miniature; modelling in clay, wax and plaister; sawing his own ivory, moulding his glasses, and making the shagreen cases for the miniatures which he painted, at a time when none of these articles could be procured, owing to the derangements of a revolutionary war. He made himself a wooden mannequin or lay-figure, upon which to cast his draperies; made a violin and guitar, and assisted in the construction of the first organ built in Philadelphia. But it was chiefly in multitudinous operations connected with his Museum that he found continual employment for his invention and mechanical propensities. Transparent paintings with changeable effects of light and colour, and figures in motion; the preservation of every variety of animals; the moulding of glass eyes, carving wooden limbs, upon which to stretch the skins of his quadrupeds, with anatomical accuracy, &c. Many precious months of his life were consumed in perfecting, with Mr. J. H. Hawkins, their Polygraph, which became one of his untiring hobbies, as he never wrote a letter afterwards without preserving a cotemporaneous duplicate.

For a number of years he supplied the dificiencies of his teeth with ivory of his own manufacture, and finally succeeded in making them of porcelain, not only for himself and family, but for others, as he prided himself on being the only operator in this style in America.

We shall close this sketch by an observation of Colonel Trumbull: "That an interesting comparison might be drawn between Mr. Peale and his countryman Mr. West, who was a striking instance how much could be accomplished with moderate genius, by a steady and undeviating course directed to a single object; to become the first Historical painter of his age; whilst the other, with a more

lively genius, was able to acquire an extraordinary excellence in many arts, between which his attention was too much divided. For had he confined his operations to one pursuit he probably would have attained the highest excellence in the Fine Arts."

However praiseworthy may have been his industry; remarkable or amusing his ingenuity; and productive his perseverance to the success of his Museum—he possessed a higher claim to the remembrance and esteem of his countrymen. He was a mild, benevolent, good man.

EMBELLISHMENTS

TO

VOLUME I.

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NATURAL HISTORY.

No branch of human learning is more intimately connected with the other sciences, than that of Natural History, and none presents so inexhaustible a fund of inquiry and amusement. Placed as we are, in the midst of the multiplied productions of nature, it is almost impossible even for the most unobservant, to avoid becoming more or less familiar with the manners of animals, the economy of vegetables, and the general phenomena of the earth. From an acquaintance with these, manifold advantages have already accrued to man, and it is but reasonable to suppose that a more intimate knowledge of them, will greatly increase the comfort and enjoyment of the whole human race. The agriculturist is obliged to acquaint himself, with the habits and characters of the domesticated animals he employs, with the qualities of the soil he cultivates, with the nature of the grain he raises, and with the effects of different meteorogical changes. Even the fine arts, though generally considered as peculiarly appertaining to the domain of the imagination, greatly depend upon a knowledge of Natural History. A science, which when taken in its full extent, is so intimately connected with all our pursuits and pleasures, forming in fact the basis of the other sciences, and far more useful than any for the ordinary purposes of life, can never be too generally or too industriously cultivated. Supposing that the study of animated nature is far more engaging to the generality of readers, and leaving the examination of plants and minerals to the botanist and geologist; we shall endeavour in the succeeding sketches of our native animals, to present such only, as from their holding a more eminent rank among the brute creation, or from their being peculiarly serviceable or injurious to man, are the most worthy of notice, and most likely to interest the observer. In attempting this, we shall not proceed in any regular or systematic order, or adhere to any system of classification in the arrangement of the subjects. But at the same time, the most sedulous attention will be paid to their synonomy and scientific description, and we shall strive to explain their characters, with as much simplicity, elegance of expression, and certainty of information, as we can possibly attain. We, however, are far from considering, that the study of nature consists in the acquirement of words, the retention of names, or even the accurate description of species; under the present elevated views of science, these are esteemed but subsidiary steps. A prejudiced adherence to mere nomenclature, as is forcibly observed by a late distinguished writer, "shuts the door to all further improvement, and has impressed naturalists with an idea, that the highest object to be obtained, is to label the contents of a museum, and to arrange stuffed animals like quaint patterns in glass cases." We would not wish it to be understood, however, that we consider nomenclature and scientific arrangement as useless or beneath the notice of a philosophic naturalist; far from it; experience has amply demonstrated that a neglect of these, must necessarily involve the sciences in an almost inextricable confusion, and retard, instead of facilitating the acquisition of knowledge.

We do not aim at originality, but shall freely avail ourselves of the labours of our predecessors, adding however such new and interesting matter as we may become pos-

sessed of, in elucidation of the subjects: our great aim being to present such a history of our different native animals, as may amuse whilst it instructs, and tend to invite our readers to closer and more minute investigations.

With these views we have undertaken the present work; how far the execution may merit the approbation of the public, we leave the candid and judicious to decide. In the formation of plans, the general and the statesman, the author and the artist, are apt to rely too much on their own powers and the fortuitous concurrence of favourable circumstances. That which displayed elegance and splendour, when it existed only in idea, but too often becomes mean and uncouth when brought into real existence.

THE EDITORS.

COMMON DEER.

COMMON DEER.

CERVUS VIRGINIANUS.

[Plate I.]

Cervus Virginianus. Gmelin.—*Fallow Deer.* Catesby, *App.* ii. 28. Lawson, *Carol.* 123.—*Virginian Deer.* Pennant. *Arct. Zool.* i. 32.—*Caricon femelle.* Buffon, 12. *pl.* 44.—*Cerf de la Louisiane.* G. Cuv. *Ossmen. Foss.* iv. 34. Regn. *animal.* i. 263.—*Cerf de Virginie.* Desm. *Mammal. sp.* 679. *p.* 442.—*Common Deer.* Godman. i. 306.—Peale's *Museum.*

The word Deer is derived either from the Teutonic *deor*, or from the Greek Θηρ, and is very variously written and pronounced, not only by different nations, but also in different ages. These well known quadrupeds, belong to the great order of Pecora or Ruminants; an order, as is observed by Cuvier, exceedingly natural and well determined, nearly all the animals composing it, being formed on the same model, the Camel alone presenting some slight exceptions to the common character of the group.

These characters are, having incisors or cutting teeth, in the lower jaw only, and these generally eight in number; their place in the upper jaw being supplied by a hardened gum. Between these incisors and the molars or grinding teeth, is a vacant space, except in some genera, which are provided with one or two canines. The molars, which are usually six in number, are marked on their crowns by two crescents, whose convexity is turned inwards in the upper jaw, and outwards in the lower. The feet are terminated by two toes covered by hoofs, which have flat surfaces closely applied to each other, giving the appearance of a single hoof, divided through the middle, whence the terms cloven footed, bifurcated, &c. The most singular peculiarity of these animals is that of rumination, or of returning the food to the mouth, to be again masticated, after it has been once swallowed. This peculiarity arises from the structure of their stomachs, which are four in number—The first is called the paunch, and is destined to receive the half masticated food, when it is first swallowed; the food soon passes into the second or bonnet, which is small, globular, and lined by a membrane disposed like the cells of a honey comb. From this stomach, in which it undergoes a kind of preparation, the food is returned to the animal's mouth, to be subjected to a more complete mastication, after which it is again swallowed and passes into the third stomach or feck, whose internal membrane is arranged in longitudinal folds, like the leaves of a book; it then finally enters the fourth or true stomach in which it undergoes the process of digestion. The fat of ruminating animals is harder and more consistent than that of other quadrupeds, and is well known under the name of Tallow. Of all the numerous species of animals, none are so useful to man as those included in this order. They supply him with the mass of his food, and furnish a variety of substances indispensable to his comfort and happiness.

The genus Deer, consists of such animals of this order as are furnished with deciduous horns or antlers, destitute of a horny sheath. They are generally remarkable not only for the elegance of their form, the symmetry of their proportions and swiftness of their motions, but also for the excellence of their flesh. Hence it is not surprising that they have been eagerly hunted in every age, as well for subsistence as for amusement. The most striking and curious parts of their conformation are the horns, or those osseous productions of the forehead which are detached and reproduced annually, and which, except in the Rein Deer, are exclusively appropriated to the males. This annual shedding of the horns, however, is not peculiar to the whole genus, but appears to be restricted to such species as reside in cold or temperate climates, or in whom these appendages are of a large size. This provision of nature is a most inexplicable phenomenon as regards its utility, and yet the mode in which the process is effected is subordinate to fixed and immutable laws.

The word horn, which is generally applied to the antlers of the Deer kind, is apt to lead to erroneous ideas on the subject, as this antler is a real bone, formed in the same

manner and constituted of the same integral parts as other bones. These protuberances begin to be developed at a given age; the first appearance being a tubercle, which, in most cases, gradually rises into a simple antler, though in some species it branches off into ramifications; after a certain period the development is arrested, and finally the horn is detached and falls off. The learned translators of Blumenbach's Comparative Anatomy* have given the following explanation of this curious process. "The antler adheres to the frontal bone by its basis; and the substance of the two parts being consolidated together, no distinction can be traced, when the antler is perfectly organised. But the skin of the forehead terminates at its basis, which is marked by an irregular projecting bony circle, and there is neither skin nor periosteum on the rest of it. The time of its remaining on the head is one year; as the period of its fall approaches, a reddish mark of separation is observed between the process of the frontal bone and the antler. This becomes more and more distinctly marked, until the connexion is entirely destroyed. The skin of the forehead extends over the process of the frontal bone when the antler has fallen. At the period of its regeneration, a tubercle arises from this process, and takes the form of the future antler, being still covered by a prolongation of the skins. The structure of the part at this time is soft and cartilaginous; it is immediately invested by a true periosteum, containing large and numerous vessels, which penetrate the cartilage in every direction, and, by the gradual deposition of ossific matter, convert it into perfect bone. The vessels pass through openings in the projecting bony circle at the base of the antler; the formation of this part proceeding in the same ratio with that of the rest, the openings are contracted and the vessels are thereby pressed, till a complete obstruction ensues. The skin and periosteum then perish, become dry, and fall off; the surface of the antler remaining uncovered."

The form and disposition of the antlers differ in every species, and the flattened or palmated shape of them in some, seems to be a provision of nature to enable the animals to obtain their food from beneath the snow, for it is a remarkable fact that this structure is almost wholly confined to such as inhabit high latitudes, and is developed in proportion to the length and severity of the climate.

The sense of smell is very delicate in these animals, and they are exceedingly select in their choice of food, applying to it the nostrils, and sometimes the spiracula which seem to communicate, in some manner, with the olfactory apparatus. This spiraculum or sinus is not found in all species, some having only a fold of the skin or none, whilst in others it forms a sack. The French call them *larmiers*, believing that they are receptacles for tears; this idea has also been adopted by poets: thus, Shakspeare gives the following touching description of a wounded stag:

> "The wretched animal heav'd forth such groans,
> That their discharge did stretch his leathern coat
> Almost to bursting; and the big round tears
> Coursed one another down his innocent nose
> In piteous chase."

The voice of the genus is in general disagreeable. The females produce one or two fawns at a time. In temperate regions this takes place in the spring. The intellectual character of the Deer is far from contemptible; rendering the chase of the stag very curious. The amusement of hunting has been as assiduously cultivated among civilized nations as with the savage tribes who depend upon it for their subsistence. In fact, it was considered as an art, and accommodated with a set of technical phrases. Thus, in the old works on "Venerie," we find that the young animal in the first six months of its life was called a *calf* or *hind calf*, it then became a *knobber;* then a *pricket*, *brock*, or *staggard;* next a *stag*, and after that a *hart:* the female, from a *hind calf*, becomes first a *hearse* and then a *hind*. The stag is said to *harbour* in the place in which he resides; when he cries he is said to *bell;* the print of his hoof is the *slot;* the tail the *single;* his excrement the *feumet;* his horns are termed his *head*, and are, in the first year, *broches;* in the third year, *spears;* in the fourth year, the part bearing the antlers is called the *beam;* he has also *antlers*, *sur-antlers*, and *royal-antlers*. These animals afford various articles of utility to man. The firm and solid texture of the horns fits them for handles to knives and other domestic utensils. The skin is dressed into excellent leather. The flesh, as we have before observed, affords a pleasant and wholesome food.

The Common Deer is found from Canada on the north to Mexico on the south, and its western range is perhaps only limited by the ocean. This beautiful and delicate animal is about three feet three inches in height at the shoulder, of a light and elegant form, with a long tapering nose; the horns reclined on the head turn outwards, and then form a decided curve so as to present their extremities forwards; the burr is of a moderate size, and just above it, on the internal side of the beam, is a single short antler, inclining inwards; the first horn is only a simple pricket, which is succeeded by a fork on the summit; in the fifth year, the antlers consist of two cylindrical whitish and tolerably smooth shafts, separating into two or three snags on the posterior part of it upwards and outwards. In old animals the superior part of the beam flattens, and the snags and point become dichotomous; while the burr widens considerably, and sometimes throws out spurious collateral shoots. The

* Mr. Lawrence and Mr. Coulson.

horns are usually about twenty inches in length, measured along the curve, but are subject to much variation, as in the fourth year animals have been killed with only single prickets of seven or more inches in length; this malformation has given rise to a supposition that we had Deer with single horns in the United States.

The summer coat of the male and female, is of a glossy cinnamon brown above; the under part of the lower jaw, throat, belly, lower part of the limbs, posterior edges of the fore limbs, anterior part of the thighs and inferior surface of the tail, white. The front is greyish, whilst the tip of the muzzle is of a deep brown, with two white spots upon the upper lip; and on the sides of the lower jaw, at the angles of the mouth, two triangular black spots are very generally found. The ears are long and pointed, the eyes peculiarly soft and beautiful. The fawn colour changes to a fine brown grey in winter. The fawn is of a lively fulvous brown, marked, during the first year, with numerous white spots; towards the latter part of the summer it loses these, and becomes greyish. Mr. Say observes of these changes, "in this state the Deer is said by the hunters to be *in the grey*. This coat is shed in the latter part of May and beginning of June, and is then substituted by the reddish coat. In this state, the animal is said to be *in the red*. Towards the last of August, the old bucks begin to change to the dark bluish colour; the doe commences this change a week or two later. In this state, they are said to be *in the blue*. This coat gradually lengthens until it again comes to the *grey*. The skin is said to be toughest in the *red*, thickest in the *blue*, and thinnest in the *grey;* the blue skin is the most valuable."*

There appear to be several varieties of the Common Deer inhabiting this continent. Mr. Say notices one obtained in the neighbourhood of Engineer's Cantonment, of which he saw three specimens. In this variety the feet were marked with a white triangle, the point upwards; and also having the black mark on the lower lip strongly characterized. Albinos are by no means uncommon among this species: Mr. Titian Peale saw three during the past summer, in Lycoming county in this state, of which he obtained a buck and fawn; these have since been added to the valuable collection in the Philadelphia Museum.

The strongest variety, however, is the Long-tailed Fallow Deer, spoken of by Lewis and Clark, and since described under the name of *Cervus leucurus*, by Dr. Richardson, who observes that the name of *C. macrourus* seems to have been intended to designate this species, but the characters authors have assigned to it, rather appertain to a variety of the Black-tailed Deer. This animal appears to bear a strong general resemblance, in size, form, and habits, to the Roebuck of Europe, and has hence obtained that name among the Scotch Highlanders, employed by the Hudson's Bay Company, and that of *Chevreuil*, from the French Canadians. Mr. Douglas, who has given an account of it, in the Zoological Journal, says, it is the most common Deer in the districts adjoining the Columbia River, frequenting coppices composed of *Corylus*, *Rubus*, *Rosa*, &c. on the declivities of low hills, or dry undulating grounds. Its gait is two ambling steps, and a bound, exceeding double the distance of the steps, from which it does not depart, even when closely pursued. In running, it carries its tail erect, which, from its unusual length, is the most remarkable feature about the animal. Lewis and Clark say of it—"The Common Red Deer inhabit the Rocky Mountains about the Columbia, and down the river as far as where the tide water commences. They do not differ essentially from those of the United States, being the same in shape, size, and appearance. The tail is, however, different, being of unusual length, far exceeding that of the Common Deer." These gentlemen were of opinion, that it was only a variety of the *C. virginianus*, and Dr. Richardson admits that it may eventually prove to be so.

The males shed their horns in January; soon after which the new ones begin to be developed; these arrive at their full growth towards the end of the summer, but continue in the velvet until the end of September, or beginning of November. At this time they are fattest and in the best condition, when the rutting season commences, and continues about a month, usually terminating about the end of December. This period is with the Deer a season of madness. His neck is then swollen, his eyes are wild and glaring; he seems to forget his usual timidity and caution, and wanders through the forest unmindful of danger, striking his horns with wild impetuosity against any obstacle that presents itself, and his voice becomes louder and harsher. When two or more rival males court the favours of the same doe, dreadful combats ensue. They redouble their cries, paw the earth with their feet, and dash their heads against each other with impetuous fury. One is at length disabled, or obliged to seek safety in flight, but the victor is often forced to renew the conflict with a fresh opponent. These combats are sometimes fatal to both combatants, from their horns becoming so entangled with each other, as to prevent their disengagement, the irritated animals wearying themselves with fruitless struggles, till they die from exhaustion and hunger, or fall an easy prey to wolves. In Maj. Long's Expedition, the following instance*

* Long's Exped. to the Rocky Mountains, i. 104.

* Long's Exped. to the Rocky Mountains, ii. 300.

is recorded. "As we were descending from one of these ridges, our attention was called to an unusual noise, proceeding from a copse of low bushes on our right, at a few rods from the path; on arriving at the spot, we found two buck Deer, their horns fast interlocked with each other, and both much spent with fatigue; one, in particular, being so much exhausted, as to be unable to stand. As we perceived it would be impossible they should extricate themselves, and must linger in their present situation until they died of hunger or were destroyed by the wolves, we despatched them with our knives, not without having first made an unavailing attempt to disentangle their antlers." Mr. Say also appears to think that this is by no means an uncommon occurrence.

The doe brings forth one or two, and sometimes, though very rarely, three fawns. When the period of parturition comes on, she retires from the society of the young Deer, in whose society she had spent the winter. She feels the tenderest affection for her offspring, and displays great sagacity in protecting and bringing it up. She carefully hides it in some dense thicket, from those numerous enemies of whom its life is in danger. Even the buck himself requires to be guarded against. But between courage and ingenuity, she proves herself a powerful protectress. In the defence of her young, she will sometimes oppose force to force in the boldest manner; at others, she, with the same unconcern for her own safety, offers herself to the chase, to mislead the hunter or beast of prey, from the covert in which she has secreted her young.

Deer are supposed to live from thirty to forty years, though, judging from some instances of the longevity of the Stag of Europe, (*C. elephus,*) it is probable that this is underrated. Pliny tells us, that more than one hundred years after the death of Alexander the Great, some Stags were taken with golden chains about their necks, which appeared to have been put upon them by command of that hero.

The mild and peaceful character of Deer, affords them no protection from the hostilities of rapacious enemies. Wolves and other beasts of prey destroy vast numbers; but their chief enemy is man, who wars with the savage animals in his own defence, tyrannises over the domestic because he finds their services useful, and pursues the gentle inhabitants of the forests, either for subsistence or amusement. From the earliest ages, the hunting of Deer has been pursued with eagerness, and many stratagems have been resorted to, for the purpose of slaying or capturing these timid animals. We cannot, at this time, allude to those employed in other countries, and will, therefore, confine our observations to such as have been successfully practised by our aboriginal tribes, and their more civilized successors.

One mode practised by the Indians, is to imitate the cry of the male, or fawn. The voice of the male calling the female, is not very dissimilar to that caused by blowing into the muzzle of a gun or hollow cane, whilst that of the female calling the young is *ma, ma,* pronounced very shortly. This is well simulated by the native tribes, with a stem of the *Heracleum lanatum,* cut at the joint, leaving six inches of a tube; with this, aided by a head and horns of a full-grown buck, which the hunter carries with him as a decoy, and which he moves backwards and forwards among the long grass, alternately feigning the voice with the tube; the unsuspecting animal is attracted within a few yards, in the hope of finding its partner, when, instantly springing up, the hunter plants an arrow in his object.*

They are also shot by cautiously approaching them against the wind, the extreme acuteness of their smell enabling them to detect the approach of any one, in the opposite direction, even at very great distances. Hunters have also taken advantage of the extreme predilection of these animals for salt, and destroyed great numbers from coverts established in the vicinity of natural or artificial salines or licks. An old hunter, in this state, has informed us that he killed thirty Deer in one season by this means. Many are also shot by taking advantage of their custom of resorting to the water side, at certain times of the day. The Indians, according to Catesby, were also in the habit of encompassing a vast space of country, and driving the animals into some strait or peninsula, where they became an easy prey.

Notwithstanding the natural timidity of Deer, they will fight desperately, when wounded, or brought to bay. In this state they not only use their horns, but also inflict severe, and oftentimes fatal wounds, by leaping upwards and striking the hunter, on their descent, with the sharp edges of their hoofs. These wounds were formerly considered as peculiarly dangerous, particularly at certain seasons of the year: thus, it is asserted—

> If thou be hurt with hart, it brings thee to thy bier,
> But barber's hand will boar's hurt heal, thereof thou need'st not fear.

Whether this verse be founded on truth or fiction, it is certain, that the task of going in and killing a wounded Deer, is always attended with considerable peril. We are indebted to Mr. Titian Peale for an account of an adventure of this kind, which occurred to himself whilst attached to the Expedition to the Rocky Mountains. Messrs. Peale

* Richardson. Fauna. Bor. Am.

and Dougherty, (one of the hunters to the expedition,) being in search of Deer on Boyer River, one of the tributaries of the Missouri, discovered a fine buck, which was wounded by the latter in the shoulder, the animal, however, still being able to run, was again fired at by Mr. Peale and wounded in the fore leg of the opposite side; even this did not wholly disable it, although it so considerably retarded its progress, that they thought they should be able to run it down and then despatch it; for the sake of greater speed they laid down their rifles, and pursued it, armed only with their knives. On coming up with the animal, it immediately stood at bay, and for a long time frustrated every attempt to wound it. Mr. Dougherty then determined, whilst Mr. Peale engaged the attention of the Deer, to throw himself under it, and in this position inflict the fatal stroke. This he attempted, but the infuriated animal, instead of leaping over him, as was expected, turned on him, and wounded him with its hoofs, in the manner already spoken of; whilst thus employed, however, Mr. Peale closed with it, and was fortunate enough to disable it so completely, as to rescue his companion from the imminent danger to which he had so rashly exposed himself. Such was the force with which the animal struck, even when thus severely wounded, that Mr. Dougherty's clothes, including a thick blanket coat, were completely cut through, and a wound inflicted on his side.

The Common Deer is said by our hunters to display great antipathy to rattle-snakes, and to destroy them by leaping on them, and cutting them to pieces with their sharp hoofs; this fact, extraordinary as it may appear, is too well authenticated to be doubted. Col. Keatinge, in his travels in Spain, relates that the European Stag has the same antipathy to vipers, and kills great numbers of them in a similar manner.

The Deer is sometimes domesticated, which can be readily done, when it is taken young; it soon becomes attached to its captor and will learn to follow him like a dog. When they arrive at maturity, however, it is always dangerous to approach the bucks during the rutting season, as they will then attack every one, indiscriminately.

The flesh of the Common Deer is well known to the epicures of our large cities, in the autumn and winter, at which times it is brought down in considerable quantities. This animal also affords a valuable article of commerce, in its skin, so well known under the name of buckskin. These are in great demand, and we can form some comparative ideas of the aggregate number, and great extension of the species, from the quantity brought to our markets. Pennant states, that as early as 1764, 25,027 skins were shipped to England from New York and Philadelphia. From the number annually destroyed, and the rapid settlement of the country, they are becoming much less common than they were a few years since, although their destruction during the breeding season is prohibited by law. This may preserve the race among us for a short time, but cannot prevent their final extermination. Kalm says, that an Indian, who was living in 1748, killed many Deer where Philadelphia now stands. The Indians prepare these skins for their own use, by scraping off the hair and fleshy matter, and then smearing them with the brains of the animal until they feel soft and spongy, and lastly, suspending them over a fire make of rotten wood till they are well impregnated with the smoke.

THE ANT-LION.

The observations of the continental naturalists have made known to us a pitfall constructed by an insect, the details of whose operations are exceedingly curious—we refer to the grub of the Ant-Lion, (*Myrmeleon formicarius,*) which, though marked by Dr. Turton and Mr. Stewart, as British, has not, (at least of late years,) been found in England. As it is not, however, uncommon in France and Switzerland, it is probable it may yet be discovered in some spot hitherto unexplored, and if so, it will well reward the search of the curious.

The Ant-Lion grub being of a grey colour, and having its body composed of rings, is not unlike a woodlouse (*Oniscus*), though it is larger, more triangular, has only six legs, and most formidable jaws, in form of a reaping-hook, or a pair of calliper compasses. These jaws, however, are not for masticating, but are perforated and tubular, for the purpose of sucking the juices of ants upon which it feeds. Vallisnieri was, therefore, mistaken, as Réaumur well remarks, when he supposed that he had discovered its mouth. Its habits require that it should walk backwards, and this is the only species of locomotion which it can perform. Even this sort of motion it executes very slowly; and were it not for the ingenuity of its stratagems, it would fare but sparingly, since its chief food consists of ants, whose activity and swiftness of foot would otherwise render it impossible for it to make a single capture. Nature, however, in this, as in nearly every other case, has given a compensating power to the individual animal, to balance its privations. The Ant-Lion is slow—but it is extremely sagacious;—it cannot follow its prey but it can entrap it.

The snare which the grub of the Ant-Lion employs consists of a funnel-shaped excavation formed in loose sand, at the bottom of which it lies in wait for the ants that chance to stumble over the margin, and cannot, from the looseness of

the walls, gain a sufficient footing to effect their escape. When the pitfall is intended to be small, it only thrusts its body backwards into the sand as far as it can, throwing out at intervals the particles which fall in upon it till it is rendered of the requisite depth.

By shutting up one of these grubs in a box with loose sand, it has been repeatedly observed constructing its trap of various dimensions, from one to three inches in diameter, according to circumstances. When it intends to make one of considerable diameter, it proceeds as methodically as the most skilful architect or engineer amongst ourselves. It first examines the nature of the soil, whether it be sufficiently dry and fine for its purpose, and if so, it begins by tracing out a circle, where the mouth of its funnel-trap is intended to be. Having thus marked the limits of its pit, it proceeds to scoop out the interior. Getting within the circle, and using one of its legs as a shovel, it places therewith a load of sand on the flat part of its head, and it throws the whole with a jerk, some inches beyond the circle. It is worthy of remark, that it only uses one leg in this operation—the one, namely, which is nearest the centre of the circle. Were it to employ the others in digging away the sand, it would encroach upon the regularity of its plan. Working with great industry and adroitness in the manner we have just described, it quickly makes the round of its circle, and as it works backwards it soon arrives at the point where it had commenced. Instead, however, of proceeding from this point in the same direction as before, it wheels about and works around in the contrary direction, and in this way it avoids throwing all the fatigue of the labour on one leg, alternating them every round of the circle.

Were there nothing to scoop out but sand or loose earth, the little engineer would have only to repeat the operations we have described, till it had completed the whole. But it frequently happens in the course of its labours, sometimes even when they are near a close, that it will meet with a stone of some size which would, if suffered to remain, injure materially the perfection of its trap. But such an obstacle as this does not prevent the insect from proceeding: on the contrary, it redoubles its assiduity to remove the obstruction, as M. Bonnet repeatedly witnessed. If the stone be small, it can manage to jerk it out in the same manner as the sand; but when it is two or three times larger and heavier than its own body, it must have recourse to other means of removal. The larger stone it usually leaves till the last, and when it has removed all the sand which it intends, it then proceeds to try what it can do with the less manageable obstacles. For this purpose, it crawls backwards to the place where a stone may be, and thrusting its tail under it, is at great pains to get it properly balanced on its back, by an alternate motion of the rings composing its body. When it has succeeded in adjusting the stone, it crawls up the side of the pit with great care and deposits its burden on the outside of the circle. Should the stone happen to be round, the balance can be kept only with the greatest difficulty, as it has to travel with its load upon a slope of loose sand which is ready to give way at every step; and often when the insect has carried it to the very brink, it rolls off its back and tumbles down to the bottom of the pit. This accident, so far from discouraging the Ant-Lion, only stimulates it to more persevering efforts. Bonnet observed it renew these attempts to dislodge a stone, five or six times. It is only when it finds it utterly impossible to succeed, that it abandons the design and commences another pit in a fresh situation. When it succeeds in getting a stone beyond the line of its circle, it is not contented with letting it rest there; but to prevent it from again rolling in, it goes on to push it to a considerable distance.

The pitfall, when finished, is usually about three inches in diameter at the top, about two inches deep, and gradually contracting into a point in the manner of a cone or funnel. In the bottom of this the Ant-Lion stations itself to watch for its prey. Should an ant or any other insect wander within the verge of this funnel, it can scarcely fail to dislodge and roll down some particles of sand, which will give notice to the Ant-Lion below to be on the alert. In order to secure the prey, Réaumur, Bonnet, and others have observed the ingenious insect to throw up showers of sand, by jerking it from its head in quick succession, till the luckless ant is precipitated within reach of the jaws of its concealed enemy. It feeds only on the blood or juice of insects; and as soon as it has extracted these, it tosses the dry carcass out of its den. Its next care is to mount the sides of the pitfall and repair any damage it may have suffered; and when this is accomplished, it again buries itself among the sand at the bottom, leaving nothing but its jaws above the surface, ready to seize the next victim.

When it is about to change into a pupa, it proceeds in nearly the same manner as the caterpillar of the water-betony moth, (*Cucullia scrophulariæ*). It first builds a case of sand, the particles of which are secured by threads of silk, and then tapestries the whole with a silken web. Within this it undergoes its transformation into a pupa, and in due time it emerges in form of a four-winged fly, closely resembling the dragon-flies, (*Libellulæ,*) vulgarly and erroneously called *horse-stingers.*

The instance of the Ant-Lion naturally leads us to consider the design of the Author of Nature, in so nicely adjusting, in all animals, the means of destruction and of escape. As the larger quadrupeds of prey are provided with a most ingenious machinery for preying on the

weaker, so are these furnished with the most admirable powers of evading their destroyers. In the economy of insects, we constantly observe, that the means of defence, not only of the individual creatures, but of their larvæ and pupæ, against the attacks of other insects, and of birds, is proportioned, in the ingenuity of their arrangements, to the weakness of the insect employing them. Those species which multiply the quickest have the greatest number of enemies. Bradley, an English naturalist, has calculated that two sparrows carry, in the course of a week, above three thousand caterpillars to the young in their nests. But though this is, probably, much beyond the truth, it is certain that there is a great and constant destruction of individuals going forward; and yet the species is never destroyed. In this way a balance is kept up, by which one portion of animated nature cannot usurp the means of life and enjoyment which the world offers to another portion. In all matters relating to reproduction, Nature is prodigal in her arrangements. Insects have more stages to pass through before they attain their perfect growth than other creatures. The continuation of the species is, therefore, in many cases, provided for by a much larger number of eggs being deposited than ever become fertile. How many larvæ are produced, in comparison with the number which pass into the pupa state; and how many pupæ perish before they become perfect insects! Every garden is covered with caterpillars; and yet how few moths and butterflies, comparatively, are seen, even in the most sunny season. Insects which lay few eggs are, commonly, most remarkable in their contrivances for their preservation. The dangers to which insect life is exposed are manifold; and therefore are the contrivances for its preservation of the most perfect kind, and invariably adapted to the peculiar habits of each tribe. The same wisdom determines the food of every species of insect; and thus some are found to delight in the rose-tree, and some in the oak. Had it been otherwise, the balance of vegetable life would not have been preserved. It is for this reason that the contrivances which an insect employs for obtaining its food are curious, in proportion to the natural difficulties of its structure. The Ant-Lion is carnivorous, but he has not the quickness of the spider, nor can he spread a net over a large surface, and issue from his citadel to seize a victim which he has caught in his out works. He is therefore taught to dig a trap, where he sits, like the unwieldy giants of fable, waiting for some feeble one to cross his path. How laborious and patient are his operations—how uncertain the chances of success! Yet he never shrinks from them, because his instinct tells him that by these contrivances alone can he preserve his own existence, and continue that of his species.—*Lib. Ent. Knowledge.*

C

BASIN OF THE MISSISSIPPI.

IN A GEOLOGICAL VIEW.

The hydrographical basin of the Mississippi displays, on the grandest scale, the action of running water on the surface of a vast continent. This magnificent river rises nearly in the forty-ninth parallel of north latitude, and flows to the Gulf of Mexico in the twenty-ninth—a course, including its meanders, of nearly five thousand miles. It passes from a cold arctic climate, traverses the temperate regions, and discharges its waters into the sea, in the region of the olive, the fig, and the sugar-cane.* No river affords a more striking illustration of the law beforementioned, that an augmentation of volume does not occasion a proportional increase of surface, nay, is even sometimes attended with a narrowing of the channel. The Mississippi is a mile and a half wide at its junction with the Missouri, the latter being half a mile wide; yet the united waters have only, from their confluence to the mouth of the Ohio, a medial width of about three quarters of a mile. The junction of the Ohio seems also to produce no increase, but rather a decrease of surface.† The St. Francis, White, Arkansas, and Red rivers, are also absorbed by the main stream with scarcely any apparent increase of its width; and, on arriving near the sea at New Orleans, it is somewhat less than half a mile wide. Its depth there is very variable, the greatest at high water being one hundred and sixty-eight feet. The mean rate at which the whole body of water flows, is variously estimated. According to some, it does not exceed one mile an hour.‡ The alluvial plain of this great river is bounded on the east and west by great ranges of mountains stretching along their respective oceans. Below the junction of the Ohio, the plain is from thirty to fifty miles broad, and after that point it goes on increasing in width till the expanse is perhaps three times as great! On the borders of this vast alluvial tract are perpendicular cliffs, or "bluffs," as they are called, composed of limestone and other rocks. For a great distance the Mississippi washes the eastern "bluffs;" and below the mouth of the Ohio, never once comes in contact with the western. The waters are thrown to the eastern side, because all the large tributary rivers enter from the west, and have filled that side of the great valley with a sloping mass of clay and sand. For this reason, the eastern bluffs are continually undermined, and the Mississippi is slowly but incessantly progressing eastward.§

The river traverses the plain in a meandering course, describing immense and uniform curves. After sweeping

* Flint's Geography, vol. i. p. 21. † Ibid. p. 140. ‡ Darby.
§ Geograph. Descrip. of the State of Louisiana, by W. Darby, Philadelphia, 1816, p. 102.

round the half of a circle, it is precipitated from the point in a current, diagonally across its own channel, to another curve of the same uniformity upon the opposite shore. These curves are so regular, that the boatmen and Indians calculate distances by them. Opposite to each of them, there is always a sand-bar, answering, in the convexity of its form, to the concavity of "the bend," as it is called. The river, by continually wearing these curves deeper, returns, like many other streams before described, on its own tract, so that a vessel, in some places, after sailing for twenty-five or thirty miles, is brought round again to within a mile of the place whence it started. When the waters approach so near to each other, it often happens at high floods, that they burst through the small tongue of land; and, having insulated a portion, rush through what is called the "cut off" with great velocity. At one spot, called the "grand cut off," vessels now pass from one point to another in half a mile, to a distance which it formerly required twenty miles to reach. After the flood season, when the river subsides within its channel, it acts with destructive force upon the alluvial banks, softened and diluted by the recent overflow. Several acres at a time, thickly covered with wood, are precipitated into the stream; and the islands formed by the process before described, lose large portions of their outer circumference.

Some years ago, when the Mississippi was regularly surveyed, all its islands were numbered, from the confluence of the Missouri to the sea; but every season makes such revolutions, not only in the number but in the magnitude and situation of these islands, that this enumeration is now almost obsolete. Sometimes large islands are entirely melted away—at other places they have attached themselves to the main shore, or, which is the more correct statement, the interval has been filled up by myriads of logs cemented together by mud and rubbish. When the Mississippi and many of its great tributaries overflow their banks, the waters, being no longer borne down by the main current, and becoming impeded amongst the trees and bushes, deposit the sediment of mud and sand with which they are abundantly charged. Islands arrest the progress of floating trees, and they become in this manner reunited to the land; the rafts of trees, together with mud, constituting at length a solid mass. The coarser portion subsides first, and the most copious deposition is found near the banks where the soil is most sandy. Finer particles are found at the farthest distances from the river, where an impalpable mixture is deposited, forming a stiff unctuous black soil. Hence the alluvions of these rivers are highest directly on the banks, and slope back like a natural "glacis" towards the rocky cliffs bounding the great valley. The Mississippi, therefore, by the continual shifting of its course, sweeps away, during a great portion of the year, considerable tracts of alluvium which were gradually accumulated by the overflow of former years, and the matter now left during the spring-floods will be at some future time removed.

One of the most interesting features in this basin is "the raft." The dimensions of this mass of timber were given by Darby, in 1816, as ten miles in length, about two hundred and twenty yards wide, and eight feet deep, the whole of which had accumulated, in consequence of some obstruction, during about thirty-eight years, in an arm of the Mississippi called the Atchafalaya, which is supposed to have been at some past time a channel of the Red River, before it intermingled its waters with the main stream. This arm is in a direct line with the direction of the Mississippi, and it catches a large portion of the drift wood annually brought down. The mass of timber in the raft is continually increasing, and the whole rises and falls with the water. Although floating, it is covered with green bushes, like a tract of solid land, and its surface is enlivened in the autumn by a variety of beautiful flowers. Notwithstanding the astonishing number of cubic feet of timber collected here in so short a time, greater deposits have been in progress at the extremity of the delta in the Bay of Mexico. Unfortunately for the navigation of the Mississippi, some of the largest trunks, after being cast down from the position on which they grew, get their roots entangled with the bottom of the river, where they remain anchored, as it were, in the mud. The force of the current naturally gives their tops a tendency downwards, and by its flowing past, soon strips them of their leaves and branches. These fixtures, called snags or planters, are extremely dangerous to the steam-vessels proceeding up the stream, in which they lie, like a lance in rest, concealed beneath the water, with their sharp ends pointed directly against the bow of vessels coming up. For the most part these formidable snags remain so still, that they can be detected only by a slight ripple above them, not perceptible to inexperienced eyes. Sometimes, however, they vibrate up and down, alternately showing their heads above the surface and bathing them beneath it. So imminent is the danger caused by these obstructions, that almost all the boats on the Mississippi are constructed on a particular plan, to guard against fatal accidents. They have at their bows, a place called a snag-chamber, and confined only to boats calculated for the navigation of this river; the chamber is partitioned off, about fifteen feet from the stem, with very stout planks, well caulked, so that the remainder of the vessel is completely cut off from this room; and, consequently, should a snag strike the

vessel and perforate her bow, no further mischief accrues, than the mere filling of this snag chamber with water.

The prodigious quantity of wood annually drifted down by the Mississippi and its tributaries, is a subject of geological interest, not merely as illustrating the manner in which abundance of vegetable matter becomes, in the ordinary course of Nature, imbedded in submarine and estuary deposits, but as attesting the constant destruction of soil and transportation of matter to lower levels, by the tendency of rivers to shift their courses. Each of these trees must have required many years, some of them many centuries, to attain their full size; the soil, therefore, whereon they grew, after remaining undisturbed for long periods, is ultimately torn up and swept away. Yet notwithstanding this incessant destruction of land and uprooting of trees, the region which yields this never-failing supply of drift wood is densely clothed with noble forests, and is almost unrivalled in its power of supporting animal and vegetable life.

Innumerable herds of wild deer and bisons feed on the luxuriant pastures of the plains. The jaguar, the wolf, and the fox, are amongst the beasts of prey. The waters teem with alligators and tortoises, and their surface is covered with millions of migratory water-fowl, which perform their annual voyage between the Canadian lakes and the shores of the Mexican gulf. The power of man begins to be sensibly felt, and the wilderness to be replaced by towns, orchards, and gardens. The gilded steam-boat, like a moving city, now stems the current with a steady pace—now shoots rapidly down the descending stream through the solitudes of the forests and prairies. Already does the flourishing population of the great valley exceed that of the thirteen United States when first they declared their independence, and after a sanguinary struggle were severed from the parent country.* Such is the state of a continent where rocks and trees are hurried annually, by a thousand torrents, from the mountains to the plains, and where sand and finer matter are swept down by a vast current to the sea, together with the wreck of countless forests and the bones of animals which perish in the inundations. When these materials reach the Gulf, they do not render the waters unfit for aquatic animals; but, on the contrary, the ocean here swarms with life, as it generally does where the influx of a great river furnishes a copious supply of organic and mineral matter. Yet many geologists, when they behold the spoils of the land heaped in successive strata, and blended confusedly with the remains of fishes, or interspersed with broken shells and corals, imagine that they are viewing the signs of a turbulent, instead of a tranquil and settled state of the planet. They read in such phenomena the proof of chaotic disorder, and reiterated catastrophes, instead of indications of a surface as habitable as the most delicious and fertile districts now tenanted by man. They are not content with disregarding the analogy of the present course of Nature, when they speculate on the revolutions of past times, but they often draw conclusions concerning the former state of things directly the reverse of those to which a fair induction of facts would infallibly lead them.

There is another striking feature in the basin of the Mississippi, illustrative of the changes now in progress, which we must not omit to mention—the formation by natural causes of great lakes, and the drainage of others. These are especially frequent in the basin of the Red River in Louisiana, where the largest of them, called Bistineau, is more than *thirty miles* long, and has a medium depth of from *fifteen* to *twenty* feet. In the deepest parts are seen numerous cypress-trees, of all sizes, now dead, and most of them with their tops broken by the wind, yet standing erect under water. This tree resists the action of air and water longer than any other, and, if not submerged throughout the whole year, will retain life for an extraordinary period.* Lake Bistineau, as well as Black Lake, Cado Lake, Spanish Lake, Natchitoches Lake, and many others, have been formed, according to Darby, by the gradual elevation of the bed of Red River, in which the alluvial communications have been so great as to raise its channel, and cause its waters, during the flood season, to flow up the mouths of many tributaries, and to convert parts of their courses into lakes. In the autumn, when the level of Red River is again depressed, the waters rush back again, and some lakes become grassy meadows, with streams meandering through them.† Thus, there is a periodical flux and reflux between Red River and some of these basins; which are merely reservoirs, alternately emptied and filled like our tide estuaries—with this difference, that in the one case the land is submerged for several months continuously, and, in the other, twice in every twenty-four hours. It has happened, in several cases, that a bar has been thrown by Red River across some of the openings of these channels, and then the lakes become, like Bistineau, constant repositories of water. But even in these cases, their level is liable to annual elevation and depression, because the flood, when at its height, passes over the bar; just as, where sand-hills close

* Flint's Geography, vol. 1.

* Captains Clark and Lewis found a forest of pines standing erect under water in the body of the Columbia River in North America, which they supposed, from the appearance of the trees, to have been only submerged about twenty years.—Vol. ii. p. 241.

† Darby's Louisiana, p. 33.

the entrance of an estuary on the Norfolk or Suffolk coast, the sea, during some high tide or storm, has often breached the barrier and inundated again the interior country.

The frequent fluctuations in the direction of river-courses, and the activity exerted by running water in various parts of the basin of the Mississippi, are partly, perhaps, to be ascribed to the co-operation of subterranean movements, which alter from time to time the relative levels of various parts of the surface. So late as the year 1812, the whole valley, from the mouth of the Ohio to that of the St. Francis, including a front of three hundred miles, was convulsed to such a degree, as to create new islands in the river, and lakes in the alluvial plain, some of which were *twenty miles in extent*. We shall allude to this event when we treat of earthquakes, but may state here that they happened exactly at the same time as the fatal convulsions at Caracecas; and the district shaken was nearly five degrees of latitude farther removed from the great centre of volcanic disturbance, than the basin of the Red River, to which we before alluded.* When countries are liable to be so extensively and permanently affected by earthquakes, speculations concerning changes in their hydrographical features must not be made without regard to the igneous as well as the aqueous causes of change. It is scarcely necessary to observe, that the inequalities produced even by one shock, might render the study of the alluvial plain of the Mississippi, at some future period, most perplexing to a geologist who should reason on the distribution of transported materials, without being aware that the configuration of the country had varied materially during the time when the excavating or removing power of the river was greatest. The region convulsed in 1812, of which New Madrid was the centre, exceeded in length the whole basin of the Thames, and the shocks were connected with active volcanoes more distant from New Madrid than are the extinct craters of the Eyfel or of Auvergne from London. If, therefore, during the innumerable eruptions which formerly broke forth in succession in the parts of Europe last alluded to, the basin of the principal river of our island was frequently agitated, and the relative levels of its several parts altered (an hypothesis in perfect accordance with modern analogy,) the difficulties of some theorists might, perhaps, be removed; and they might no longer feel themselves under the necessity of resorting to catastrophes out of the ordinary course of Nature, when they endeavour to explain the alluvial phenomena of that district.—*Lyell's Geology.*

* Darby mentions beds of marine shells on the banks of Red River, which seem to indicate that Lower Louisiana is of recent formation: its elevation, perhaps, above the sea, may have been due to the same series of earthquakes which continues to agitate equatorial America.

THE WISHTONWISH,

OR PRAIRIE DOG.

The name of *Wishtonwish* has lately become familiar, from a celebrated novel, by Cooper, bearing this title, which is the Indian name for an animal described by Say, in Long's Expedition.

Mr. Cooper has mistaken the animal, and describes it as a bird, known by the name of Whippoorwill. Say remarks, that "this interesting and sprightly little animal has received the absurd and inappropriate name of Prairie dog, from a fancied resemblance of its warning cry to the hurried barking of a small dog. This sound may be imitated with the human voice, by the pronunciation of the syllable cheh, cheh, cheh, in a sibilated manner, and in rapid succession, by propelling the breath between the tip of the tongue and the roof of the mouth.

As particular districts, of limited extent, are, in general, occupied by the burrows of these animals, such assemblages of dwellings are denominated *Prairie dog villages* by hunters and others who wander in these remote regions.

These villages, like those of man, differ widely in the extent of surface which they occupy; some are confined to an area of a few acres, others are bounded by a circumference of many miles. Only one of these villages occurred between the Missouri and the Pawnee towns; thence to the Platte they were much more numerous.

The entrance to the burrow is at the summit of the little mound of earth brought up by the animal during the progress of the excavation below.

These mounds are sometimes inconspicuous, but generally somewhat elevated above the common surface, though rarely to the height of eighteen inches. Their form is that of a truncated cone, on a base of two or three feet, perforated by a comparatively large hole or entrance at the summit or in the side. The whole surface, but more particularly the summit, is trodden down and compacted, like a well-worn pathway. The hole descends vertically to the depth of one or two feet, whence it continues in an oblique direction downward.

A single burrow may have many occupants. We have seen as many as seven or eight individuals sitting upon one mound. As they pass the winter in a lethargic sleep, they lay up no provision of food for that season, but defend themselves from its rigors by accurately closing up the entrance of the burrow. The further arrangements which the Prairie dog makes for its comfort and security are worthy of attention. He constructs for himself a very neat globular cell with fine dry grass, having an aperture at top, large enough to admit the finger, and so compactly formed that it might almost be rolled over the floor without receiving injury."

RUFFED GROUSE, or PHEASANT

RUFFED GROUS, OR PHEASANT.

TETRAO UMBELLUS.

[Plate II.]

Arct. Zool. p. 301, *No.* 179.—*Ruffed Heath-cock, or Grous,* Edw. 248.—*La Gelinote huppée de Pennsylvanie,* Briss. i. 214.—*Pl. Enl.* 104.—Buff. ii. 281.—*Phil. Trans.* 82, 393.—Turt. *Syst.* 454.

This is the *Partridge* of the Eastern States, and the *Pheasant* of Pennsylvania, and the southern districts. It is represented in the plate of about one-third of its size; and was faithfully copied from a perfect and very beautiful specimen in the collection of S. P. Griffitts, prepared by T. R. Peale.

This elegant species is well known in almost every quarter of the United States, and appears to inhabit a very extensive range of country. It is common at Moose fort, on Hudson's bay, in lat. 51°; is frequent in the upper parts of Georgia; very abundant in the States of Kentucky and Indiana; and was found by captains Lewis and Clarke in crossing the great range of mountains that divide the waters of the Columbia and Missouri, more than three thousand miles, by their measurement, from the mouth of the latter. Its favourite places of resort are high mountains, covered with the balsam pine, hemlock, laurel, and such like evergreens. Unlike the Pinnated Grous, it always prefers the woods; is seldom or never found in open plains; but loves the pine-sheltered declivities of mountains, near streams of water. This great difference of disposition in two species, whose food seems to be nearly the same, is very extraordinary. In those open plains called the barrens of Kentucky, the Pinnated Grous was seen in great numbers, but none of the Ruffed; while in the high groves with which that singular tract of country is interspersed, the latter, or Pheasant, was frequently met with; but not a single individual of the former.

The native haunts of the Pheasant being a cold, high, mountainous, and woody country, it is natural to expect that as we descend thence to the sea shores, and to the low, flat, and warm climate of the Southern States, these birds should become more rare, and such indeed is the case. In the lower parts of Carolina, Georgia, and Florida, they are very seldom observed; but as we advance inland to the mountains, they again make their appearance. In the lower parts of New Jersey we indeed occasionally meet with them; but this is owing to the more northerly situation of the country; for even here they are far less numerous than among the mountains.

Dr. Turton, and several other English writers, have spoken of a Long-tailed Grous, said to inhabit the back parts of Virginia, which can be no other than the present species, there being, as far as I am acquainted, only these two,* the Ruffed and Pinnated Grous, found native within the United States.

The manners of the Pheasant are solitary; they are seldom found in coveys of more than four or five together, and more usually in pairs or singly. They leave their sequestered haunts in the woods early in the morning, and seek the path or road to pick up gravel, and glean among the droppings of the horses. In travelling among the mountains that bound the Susquehanna, I was always able to furnish myself with an abundant supply of these birds, every morning, without leaving the path. If the weather be foggy, or lowering, they are sure to be seen in such situations. They generally move along with great stateliness, spreading their long tails in a fan-like manner. The drumming, as it is usually called, of the Pheasant, is another singularity of this species. This is performed by the male alone. In walking through solitary woods frequented by these birds, a stranger is surprised by suddenly hearing a kind of thumping, very similar to that produced by striking two full-blown ox-bladders together, but much louder; the strokes, at first, are slow and distinct; but gradually increase in rapidity until they run into each other, resembling the rumbling sound of very distant thunder, dying away gradually on the ear. After a few minutes pause, this is again repeated; and in a calm day may be heard nearly half a mile off. This drumming is most common in spring, and is the call of the cock to his favourite female. In the early part of the season, it frequently happens that this drumming attracts the attention of some rival cock, which is led to the spot from whence it proceeds, when a most furious battle takes place between them as competitors for the hen, and owing to the gameness of these birds, it lasts for a considerable time; victory, however, is generally on the side of the injured party, owing probably to the greater degree of fierceness with which he combats, in protection of his favourite, than that exhibited by his antagonist. They fight keenly, and strike exceeding hard with their wings, alternately seizing each other with their bills. This drumming is produced in the following manner.—(*Vide Plate II.*) The bird, standing on the old prostrate log, generally in a retired and sheltered situation, lowers his wings, erects his expanded tail, contracts his throat, elevates the two tufts of feathers on the neck, and inflates his whole body, something in the manner of the turkey cock, strutting and wheeling about with

* Since Wilson's researches, four other species have been discovered, viz: Dusky Grous, *Tetrao Obscurus.* Spotted Grous, *T. Canadensis.* Long-tailed Grous, *T. Phasianellus,* and Cock of the Plains, *T. Urophasianellus.*—Syn. Birds U. S. by C. L. Buonaparte.

great stateliness. After a few manœuvres of this kind, he begins to strike with his stiffened wings in short and quick strokes, which become more and more rapid until they run into each other, as has been already described. This is most common in the morning and evening, though I have heard them drumming at all hours of the day. By means of this, the gunner is led to the place of his retreat; though to those unacquainted with the sound, there is great deception in the supposed distance, it generally appearing to be much nearer than it really is.

The Pheasant begins to pair in April, and builds its nest early in May. This is placed on the ground at the root of a bush, old log, or other sheltered and solitary situation, well surrounded with withered leaves. Unlike that of the Quail, it is open above, and is usually composed of dry leaves and grass. The eggs are from nine to fifteen in number, of a brownish white, without any spots, and nearly as large as those of a pullet. The young leave the nest as soon as hatched, and are directed by the cluck of the mother, very much in the manner of the common hen. On being surprised, she exhibits all the distress and affectionate manœuvres of the Quail, and of most other birds, to lead you away from the spot. I once started a hen Pheasant, with a single young one, seemingly only a few days old; there might have been more, but I observed only this one. The mother fluttered before me for a moment, but suddenly darting towards the young one, seized it in her bill, and flew off along the surface through the woods, with great steadiness and rapidity, till she was beyond my sight, leaving me in great surprise at the incident. I made a very close and active search around the spot for the rest, but without success. Here was a striking instance of something more than what is termed blind instinct, in this remarkable deviation from her usual manœuvres, when she has a numerous brood. It would have been impossible for me to injure this affectionate mother, who had exhibited such an example of presence of mind, reason, and sound judgment, as must have convinced the most bigotted advocates of mere *instinct*. To carry off a whole brood in this manner, at once, would have been impossible, and to attempt to save one at the expense of the rest, would be unnatural. She therefore usually takes the only possible mode of saving them in that case, by decoying the person in pursuit of herself, by such a natural imitation of lameness as to impose on most people. But here, in the case of a single solitary young one, she instantly altered her plan, and adopted the most simple and effectual mean for its preservation.

The Pheasant generally springs within a few yards, with a loud whirring noise, and flies with great vigour through the woods, beyond the reach of view, before it alights. With a good dog, however, they are easily found; and sometimes exhibit a singular degree of infatuation, by looking down, from the branches where they sit, on the dog below, who, the more noise he keeps up, seems the more to confuse and stupify them, so that they may be shot down, one by one, till the whole are killed, without attempting to fly off. In such cases, those on the lower limbs must be taken first, for should the upper ones be first killed, in their fall they alarm those below, who immediately fly off. This plan is more usually followed by persons residing amongst the mountains, and who are unskilled in shooting on the wing; and the dogs employed by them, are of the springing spaniel, or of some small breed addicted to much barking. But in the lower countries and by sportsmen, the Pheasant is hunted with setter or pointer dogs, and is a very difficult bird to shoot in consequence of its great shyness, as it most commonly keeps in the thickest cover, and will fly at the near approach of the dog or sportsman, unless indeed the dog be particularly trained to this kind of hunting. They are pretty hard to kill, and will often carry off a large load to the distance of two hundred yards, and drop dead. This bird, after its first or second flight, still finding itself pursued, often resorts to stratagem by either taking shelter in the fork of some tree, where it will remain immoveable, and suffer its enemy to pass immediately under it, or it will settle at the root of some thick bush or tree, and remain so until almost trodden upon; it will then rise, and darting off behind this intervening object, completely elude its pursuer.

In deep snows they are usually taken in traps, commonly dead traps, supported by a figure 4 trigger; at this season, when suddenly alarmed, they will frequently dive into the snow, particularly when it has newly fallen, and coming out at a considerable distance, again take wing. Another manner of catching these birds, is by fencing off with dead brush-wood to the height of three or four feet, some narrow thicket, generally resorted to by them, and leaving it impassable except through several holes placed at regular distances, into which nooses made of horse-hair are suspended; the Pheasant, after running along the fence, finds no other passage, attempts to get through these holes, and is almost sure to fall a victim to these artifices of the country boys. Sometimes in the depth of winter they approach the farm house, and lurk near the barn, or about the garden. They have also been often taken young and tamed, so as to associate with the fowls; and their eggs have frequently been hatched under the common hen; but these rarely survive until full grown. They are exceedingly fond of the seeds of grapes; occasionally eat ants, chesnuts, black berries, and various vegetables, and in the spring of the year the tender buds of the young sassafras.

Formerly they were numerous in the immediate vicinity of Philadelphia; but as the woods were cleared, and population increased, they retreated to the interior. At present there are very few to be found within several miles of the city, and those only singly, in the most solitary and retired woody recesses.

In the uninhabited wilds of the north, far from the persecuting energies of its great enemy, man, this bird becomes almost as tame as the domestic fowl, and will seldom fly at the approach of the traveller, but contents itself by merely walking a short distance from his path to avoid him. In the State of Maine, Mr. T. R. Peale saw a great number, and experienced this fact, as they could scarcely be made to fly; and if chased would only run but a few yards into the bushes, and then stop.

The Pheasant is in best order for the table in September and October. At this season they feed chiefly on whortleberries, and the little red aromatic partridge-berries, the last of which gives their flesh a peculiar delicate flavour. With the former our mountains are literally covered from August to November; and these constitute at that season the greater part of their food. During the deep snows of winter, they have recourse to the buds of alder, and the tender buds of the laurel. I have frequently found their crops distended with a large handful of these latter alone; and it has been confidently asserted, that after having fed for some time on the laurel buds, their flesh becomes highly dangerous to eat of, partaking of the poisonous qualities of the plant. The same has been asserted of the flesh of the deer, when in severe weather, and deep snows, they subsist on the leaves and bark of the laurel. Though I have myself eat freely of the flesh of the Pheasant, after emptying it of large quantities of laurel buds, without experiencing any bad consequences, yet, from the respectability of those, some of them eminent physicians, who have particularized cases in which it has proved deleterious, and even fatal, I am inclined to believe that in certain cases where this kind of food has been long continued, and the birds allowed to remain undrawn for several days, until the contents of the crop and stomach have had time to diffuse themselves through the flesh, as is too often the case, it may be unwholesome, and even dangerous. Great numbers of these birds are brought to our markets, at all times during fall and winter, some of which are brought from a distance of more than a hundred miles, and have been probably dead a week or two, unpicked and undrawn, before they are purchased for the table. Regulations, prohibiting them from being brought to market, unless picked and drawn, would very probably be a sufficient security from all danger. At these inclement seasons, however, they are generally lean and dry, and indeed at all times their flesh is far inferior to that of the Quail, or of the Pinnated Grous. They are usually sold in Philadelphia market at from three quarters of a dollar to a dollar and a quarter a pair, and sometimes higher.

The Pheasant or Partridge of New England, is eighteen inches long, and twenty-three inches in extent; bill a horn colour, paler below; eye reddish hazel, immediately above which is a small spot of bare skin, of a scarlet colour; crested head and neck variegated with black, red brown, white and pale brown; sides of the neck furnished with a tuft of large black feathers, twenty-nine or thirty in number, which it occasionally raises: this tuft covers a large space of the neck destitute of feathers; body above a bright rust colour, marked with oval spots of yellowish white, and sprinkled with black; wings plain olive brown, exteriorly edged with white, spotted with olive; the tail is rounding, extends five inches beyond the tips of the wings, is of a bright reddish brown, beautifully marked with numerous waving transverse bars of black, is also crossed by a broad band of black within half an inch of the tip, which is bluish white, thickly sprinkled and speckled with black; body below white, marked with large blotches of pale brown; the legs are covered half way to the feet with hairy down, of a brownish white colour; legs and feet pale ash; toes pectinated along the sides, the two exterior ones joined at the base as far as the first joint by a membrane; vent yellowish rust colour.

The female and young birds differ in having the ruff or tufts of feathers on the neck of a dark brown colour, as well as the bar of black on the tail inclining much to the same tint.

HUNTING SPIDERS.

There is a tribe of hunting Spiders that leap like tigers on their prey, and, what is more extraordinary, have the faculty of doing so sideways. One of these jumped two feet on a humble-bee. They approach the object of their intended attack with the noiseless and imperceptible motion of the shadow of a sun-dial. If the fly move, the Spider moves also, backwards, forwards, or sideways, and that with so much precision as to time and distance, that the two insects appear as if bound together by some invisible chain, or actuated by the same spirit. If the fly take wing and pitch behind the Spider, the head of the latter is turned round to meet it so quickly that the human eye is deceived, and the Spider appears to be motionless. When all these manœuvres bring the fly within its springs, the leap is made with fearful rapidity, and the prey struck down like lightning. The redeeming trait in the history of these cruel creatures is affection for their young.—*Fam. Lib.*

"By various sports,
O'er hills, through valleys, and by river's brink,
Is life both sweeten'd and prolong'd."

THE USEFULNESS OF SPORTING.

It has often been said, that the benefit from any exercise depended very much upon the immediate effect on the mind and feelings, and that those amusements were consequently the most useful, that produced the greatest portion of gaiety and hope.

Of all the active relaxations that can be enjoyed, few rank in the production of these charms of life, with the various modifications of Sporting.

Independent of the simple exercise which can be practised in other modes, the mind and heart become so interested, that few of the ills of life can "bear with heavy hand" on the enthusiastic *railer*, or the industrious *hunter* of the woods. He forgets, in the all-absorbing excitement, the pains of body or of mind diseased; throws aside the pressure of care, and loses, in the thrilling luxury of the moment, the recollection of distresses that had almost borne him to the earth. Men who are fond of these amusements, are enabled by the simple exhilaration of mind, to pass through exposure and fatigue, that in more dispassionate moments would have produced overwhelming exhaustion and disease, and, in the infatuating enjoyment of successful sport, we feel transported to a state of bliss, the recollection of which

"Will well repay,
For many a long cold night and weary day."

To a sportsman the sight or sound of a gun, of a hunting dog or game bird, has music in it that will reach his very heart, and recall

"Many a pleasure of days gone by,"

and even in the "sear and yellow leaf" of existence, I have seen the remembrance of field-delights, long since faded in the vista of years, recall a rejuvenescence of feelings that seemed to rob life of its tedium, and age of its feebleness.

Of the advantages of Sporting to the health, too much cannot be said. Whether confined to the diminutive circumference of a boat, or roaming the wide, wild range of mountain forest, the immediate effects are immense. The circulation of the blood is increased and regulated, nervous derangements corrected, digestion improved, muscular pain and debility destroyed, and even some of the alarming complaints of the lungs more certainly removed, than by all the nostrums that ever emanated from a "licensed murderer." Many astonishing cures have been made by that most effective of all surgical instruments, the gun; and the fishing pole and box of worms have cheated death of more victims than the pestle and pill boxes of half the apothecaries. This I have often seen exemplified in cases that had long been *targets* for medical archery, and would still *live* in spite of the doctors; when, after every *regular* means had been used to "kill or cure" in vain, the patient has turned tail on the quackeries of science, and fled to the more grateful medicaments of country air and sylvan music, and, instead of being *cajoled* into *vain hope* by *bread pills*, or *frightened* to *death* by *long bills*, he is *consoled* into *certain health* by administering *lead pills*, and *charmed* into a *long life* by being at the *death* of many a *bill* far more agreeable to the sight.

Even some of the very serious complaints of the lungs, as discharges of blood, I have known entirely removed by these means; and in one gentleman of this city, the fatiguing amusement of partridge shooting was his only effective remedy when the blood would appear at every cough. A physician of respectability, "who would infallibly have consumption if he in the least exposed himself," according to the omniscient opinion of one of these retailers of health, was perfectly cured of all his ailments by the rugged labours of a sportsman.

I have known cases of rheumatism, where the patient could with difficulty bring the gun to his shoulder in the beginning, entirely relieved in a few days. Diseases of the spine and painful affections of the head, if unattended by much fever, are almost invariably assisted by this recreation. Neither need the invalid fear from the exposure, though violent exertion should be avoided in the commencement, for the excitement of mind keeps up an artificial warmth within, that seems to neutralize the cold without, and the muscles soon become so accustomed to the labour, that they are strengthened, and the nerves immediately invigorated. For dyspeptics, this remedy far surpasses all the humbugs of quacks, or scientific nonsense of the "regular bred," as being far more permanently useful, as well as more agreeable in the dose, than *bran bread* and *black tea*, with abundance of apothecary stuff; or having a loaf of bread made out of your abdomen by the New York system of *kneading*.

I would not in the most distant manner insinuate, that a regular system of *medical* practice is not eminently useful in all these diseases at a particular stage, for by thus doing, my own *personal* interest might be deeply outraged; but there is a *time* in *all* cases, when the doctor becomes a *nuisance*, and the apothecary a *bore;* and if physicians would but *choose* to learn the moment when their *kindnesses* really ceased to be required, and show less *interest*

in a continuance of their visits, I believe the *sum* of confinement to the sick room, as well as the *amount* of medical expenditures, would be materially diminished.

So soon as the inflammatory stage has passed by, and that weak, irritable state of the system which follows almost every case, comes on, then is the time to forsake the "charms of medicine" and the *luxury* of the doctor's *presence*, and seek in fresh air and exercise that invigorating principle of health, that would be in the confined chamber like the *mirage* of the desert,

"A splendid phantom,
The child of hope, but leading to despair."

If citizens who are closely confined for most part of the day, instead of contenting themselves with a quiet ride on horseback, would "shoulder their guns and march away" occasionally, even for a few hours, it would produce a renovation of strength as well as spirits for business, that would counterbalance, even in its pecuniary results, for all their abstractions from the cares of life, and the addition to their stock of healthy, pleasant, bodily feelings, would contribute vastly to the aggregate of their earthly happiness.

Many persons are deterred from exposure to the air and moisture of swamps and marshes, from a fear of fevers. It has long been known to physicians, that certain causes will produce disease, when acting on a system enfeebled by fatigue and abstinence, that would have passed innocuous under other circumstances; and it is also well ascertained, that the immediate effect of this debility is in the stomach. The stomach is also supposed the organ which is operated on by causes that produce fever, and hence the medical proverb, that the stomach is like a schoolboy, when unemployed it is generally in mischief. Here then, is the great *charm* of avoiding disease from exposure, keep the stomach busy, not by *stimuli*, for the debility is thus increased, but by *food* slightly stimulating, as gingerbread, &c. The writer of this article has had the benefit of some personal experience on this subject, as well as extensive observation in others, and he is well assured that few of the fevers and colds that follow exposure, would occur, if care was taken to keep this great centre of the system well occupied.

Persons starting on an expedition for sporting, often leave home in a hurry, and without laying in a sufficient stock of provender, and hence, hunt for hours on an empty stomach. Such persons soon fail in their exertions, and return home with headach, nausea, and exhaustion, and in many instances with the seeds of maladies that "ripen unto death."

All the pleasures of this world may be made with proper

precaution, useful to our being, and become, by abuse, curses to our very nature; and in the high and mighty pleasure now before us, whether in the mild, subdued and feminine search after

"The glistening ornaments of the watery world,"

or in the noble and gentlemanly enjoyment of the "detonating sport," the effects are unrivalled in the production of that happy state of mind and healthy condition of body, that can alone give melody to life and make us realize in this world

"All the luxury of a poet's dream."

I. T. S.

THE CHOICE OF GUNS,

ADAPTED FOR COMMON FIELD AMUSEMENTS.

Observations on the choice of guns best adapted for sporting purposes, and remarks relative to their manufacture, by an old sportsman, well acquainted with the amusements of the field, and the work shops of Europe.

On the Choice of Guns.—The quality of a Gun depends on a variety of circumstances, and perfection in all the parts is seldom to be found, but as the barrels are of the greatest consequence, we shall treat of them first. The size of the calibre, and the length, must depend on the game it is chiefly intended for. From two feet six, to two feet eight inches in length, with a calibre of eleven sixteenths or three quarters of an inch, is the size best adapted for grous, pheasants, rabbits, quails, and all such game as may be conveniently bagged, the weight should be from seven to eight pounds. If it be heavier it cannot be carried conveniently, nor the sportsman so well prepared for the contingencies of hunting, and consequently, game which rises unexpectedly, generally escapes before the Gun can be brought to bear on it, especially in cover, of which the pheasant and several other species of game instinctively avail themselves, frequently rising behind a tree or bush, and then flying off in a direct line, and thus eluding the keenest sportsman. The author of this essay had long entertained the belief, that a Gun of weight and capacity, was the best calculated to insure a well-filled bag, but a few years of experience convinced him of the error of his opinions. He made experiments alternately with light and heavy Guns, and compared the amount of game killed with each, and always found that he was most successful with the lighter Gun, and accounts for it as follows:—The heavy Gun was carried on his shoulder or in some other resting position, more than half of the day, not at all convenient

for a *snap** shot, while the lighter Gun was carried before him constantly, with his left hand under the barrel, and his right on the checquer of the stock, so that he was prepared to take advantage of every bird, or other object which rose unexpectedly before him. The barrels should always be made of the finest twisted nails, taken from the feet or old shoes of horses, which are wrought in bars; they are collected by the apprentice boys of blacksmiths, throughout England, and carefully treasured up until the Birmingham trader makes his periodical visit, not for the sole purpose of buying these nails, but for obtaining orders; and having settled his business with the master, he applies to the boys, and inquires how many *pies* they have to dispose of. These pies are bunches of nails inclosed in a small ring of iron, of about three or four inches in diameter, and for which the trader generally pays at the rate of from ten to twelve cents per pound, and is the apprentices' perquisite. This article, properly prepared, constitutes the strongest and best material known in the trade for Gun barrels, excepting the Damascus iron, prepared from old Damascus sword blades.

The real twisted stub barrels, as they are called, are generally confined to the London market, and sell very high. Those Guns, which find their way into this country, are only imitations of the London article, but being prepared from well wrought iron, they so closely resemble the former article, as to defy detection except by the most skilful connoisseurs; and indeed the imitation has somewhat the advantage in its general appearance, over the real article, as it respects its beauty, for being welded with thin alternate bars of very soft iron, the browning acid acts with greater rapidity, and throws out a more distinct figure of the twist. But in making choice of a Gun, the barrel should be carefully examined, and if any rotten weldings, called *greys* by the workmen, should appear on them, or in the neighbourhood of the breech, such barrels should be rejected; for although they may have withstood the proof charge insisted on by an act of parliament, which is truly severe, they will not long resist the repeated insinuations of the saltpetre occasioned by numerous discharges, and is continually acting within the blemish, until sooner or later it will burst the Gun. These greys exist more or less in all twisted barrels, but least in the Damascus, on which account the latter are preferred, by many persons, to all others. The next in reputation are those which are termed the wire twist, and are known by their regular and formal lines, and are said to stand a very high proof charge. But it is of little importance to the sportsman, whether the barrels are made of twisted nails, Damascus blades, or wire, unless indeed they are sound and perfect of their kind. The next quality requisite in the barrel, is a smooth cylindrical calibre, free from what is called ringbore; and the breech (the patent breech) should be, at its entrance, a continuation of the calibre, without a shoulder or set-off, which is very seldom the case with the factors, or what is called the export guns. As an article of trade, the London Guns are too high for the American market, ranging in price from two hundred, to three hundred and fifty dollars. Sales of this article are chiefly effected in England, France, and the East Indies.

The common mode of tapping the barrels to receive the patent breech, is to cut the thread of the screw at once, in the best London mode; it is a rule to cut out about one-fourth or one-third of the thickness of the barrels, before entering the tap, so as to admit the breech being cupped the full size of the calibre; such Guns shoot much stronger, and place their shot more regular, whilst those Guns which are less perfect in this particular, throw their shot in clusters, and in some instances in such masses as to resemble bullets, which are serious defects, existing more or less in all Guns in proportion to the shoulder or set-off of the breech, and may be explained in the following manner: The first pressure or effect of the powder, is on the centre of the shot, which is started some distance before it can act on the whole charge; consequently, the shot on the sides of the barrels becomes jammed, and from the great pressure of the centre shot, is united in masses of lead; and another consequent evil is, that the Gun becomes so foul, as to endanger the safety of the shooter, and is one of the principal causes why so many accidents occur, especially among the French and German Guns of the cheaper kind, with which the American market is glutted, and which the wise sportsman will scrupulously avoid. These remarks, however, are not intended to apply to the French or German Guns of the better kind, and of which we shall treat in some future remarks.

In choosing a Gun, attention should be paid to the lock, the cock of which should rise from its resting place, the nipple perfectly free, and rather light, with a regular and even purchase until it comes to the full bent, or cock; the sear or dog telling in the tumbler two sharp and distinct strokes, clear, and with a sort of ringing sound, which is the best criterion for persons not skilled in mechanics, although these qualities are sometimes found in very bad and unsafe locks. When the cock is drawn back to its greatest extent, the main spring should be perfectly straight, and when let down again, possessing a gentle curve; the spring should not be too strong, but very lively, and free from friction. The other materials should be made of steel in place of case-hardened iron, and consider-

* A snap shot is that, when a Gun is brought to bear immediately on the object at the moment it rests against the shoulder, and fired at the same instant.

ably *freed*, the back action is considered preferable, in consequence of its remaining clean considerably longer than any other kind.

The stock should be sound and free from shakes or cracks, and the grain of the wood should run exactly with the bend at the breech, and the next important consideration, and on which the sportsman's chance of success greatly depends, is the length from the trigger to the heel-plate. This should be proportioned to the person and to the length of his arms; should his neck be long, the stock will require to be more crooked than for a shorter person—much depends on this for quick shooting. The manner the author adopted to prove these requisites was, to fix the eyes on any given object, then shutting them, bring up the Gun to the shoulder, and point it direct at the object to the best of his judgment; then opening his eyes, examine how far the muzzle of the piece is above or below the object; if above it, the stock may be considered too straight, or if below it, too crooked: in this way the hand generally coincides with the judgment, and when a Gun is found answering to both, it will be all important, particularly in snap-shooting, where the Gun is required to be raised and fired *instanter;* in which case, success depends entirely on the co-operation of a quick hand, and a corresponding judgment; and to answer this purpose, no Gun is so well adapted as that on the percussion principle.

The best shots seldom look along the barrels, but depend entirely on the obedience of the hand to the will. It is so with all who shoot well in cover, because they see no trees, or if they see them, such shots are not baffled by intervening objects, and many a bird is doomed to fall that would assuredly escape, where sight alone is depended on.

Some persons try new Guns by firing them against a target, or fence, and commonly by the road side, to the great annoyance of those who happen to pass, at the time. This may be a popular mode, but it is certainly a very indifferent and reprehensible one. The principal object of trying a Gun in this way (as far as the author's observations have gone) is, to ascertain if the gun will shoot close, and is condemned or approved, according to the number of shot placed in a given surface. But this is fallacious; sometimes indeed the shot are examined with reference to their penetrating the wood, but the nature and condition of the wood is seldom taken into account, or the uniform manner in which the shot are planted.

It is not generally known or believed, that a Gun may shoot too close, even for an expert shot. When used for birds on the wing there should be a certain medium, and to obtain this medium is the great desideratum.

At a distance of from twenty to thirty-five yards, most game is killed, and may be considered point blank for small or medium size shot, and an ounce, or one and a quarter ounces of shot at thirty yards, will cover regularly a disk twenty-four inches in diameter, so as to secure within that range such game as pheasant, grous, partridge, rabbit, snipe, &c. In Europe, thirty-five yards is the settled distance for trial, as game is larger than in America. Three-fourths of the game in the United States is killed within the distance of twenty-five yards, excepting deer, wild-turkeys, and water-fowl, and which require a different class of Gun from that which we are now treating of. The author does not mean, that a Gun should not be tried, on making a purchase, but he only objects to that practice as a standard or criterion, solely by which it is or ought to be judged; his own experience has taught him the following manner:—Having satisfied himself of the requisites already pointed out, he charges with an ounce to an ounce and a half of shot, according to the weight of the Gun, and size of the calibre, with as much fine quality powder as would occupy two-thirds of the cubic bulk of the shot, and then placing himself as near as safety will permit, to some object aimed at, procures another person to fire the Gun: his motive in this is, to ascertain the manner in which the shot strikes the board or target, for, according to the rattling or chattering of the shot against this object, so is the Gun condemned or approved. If the shot comes up all at once, with a sharp stroke resembling the single blow of a hammer, he is confident all is right on that point, and only approaches the target to see how the shot is planted, and if satisfied with this, he seeks no other mode of trial, but proceeds in search of game, and has never been disappointed in a single instance, during a practice of thirty years in the field, in which period he has been the proprietor and vender of some hundreds of Guns.

October 19, 1830.

HUNTING RECOLLECTIONS.

About twelve miles above Bangor, in Maine, is a small island, inhabited by the Penobscot tribe of Indians; they reside in a village called Oldtown, so termed from a tradition among them, that their forefathers dwelt in the same spot, long before the appearance of the first whites in the country. In the burying ground is a large, moss-grown cross, which bears a date of the beginning of the last century. These Indians are Catholics, and are peaceable, though dirty and lazy. At this place, in 18—, I applied for a guide, in a projected hunting-expedition in the unsettled part of the country to the N. W. of their village, and it was not without difficulty that two young men could be induced to venture with a white stranger, and they would

not have consented, except by a special recommendation from their pastor, Mr. B....., to whom I had taken letters. This reluctance arose from the unprincipled conduct of most of the whites towards them.

At last, however, Mitchell Louis, and Joe Soccous, agreed to accompany me to a part of the country in which I could kill Moose and Carabou, provided I understood hunting, as on this point, they appeared to place but little faith, as I had come from a distant and thickly settled country as well as from a great city; but above all, I carried a double-barrelled percussion rifle, with a hair trigger, &c. a weapon they had never seen.

Friday, October 9, 18—. Joined my two guides on the banks of the river; they had provided themselves with two birch bark canoes. I had a white companion, Mr. H. who was placed in the bow of one, and I in that of the other, the provisions and baggage occupying the centre of each. As the Indians had to dance with their friends nearly all night, and hear mass before parting with them this morning; it was eleven o'clock before we set out up the river. It was the first time I ever was in a birch bark canoe, and to a novice a "*birch*" is certainly a ticklish article; I was obliged to sit down on the bottom and hold myself as steady as possible, or the least motion to one side heeled the frail vessel, and it being a natural effort to throw oneself in the opposite direction, the evil was always increased rather than remedied; while Joe, who paddled the boat, sat as firm and unconcerned as if he had neither jacket or powder to get wet, and was himself the passenger: sometimes, however, he exclaimed, "'spose um no still, him no paddle um canoe;" but in a few hours I ceased to give further trouble, and not only could balance myself, but began to paddle. Our canoes were about twelve feet long, and three wide at midships, and will carry but two persons and baggage, or six or eight hundred weight, and weigh about 60 pounds.

Ascended several rapids, by means of setting poles, the Indians standing up in the stern: at noon we landed to dine, but as we did not wish to lose time in cooking, made our dinners on raw pork and biscuit, our drink being sugar and water; performed the necessary operation with an Indian, of smoking our pipes, and continued our journey until night, when we encamped on a woody island. We had no tents, and as there was every appearance of rain before morning, Joe stretched his blanket on two poles, as a substitute. A mallard, some partridges (Pheasants, *Tetrao umbellus*) which I shot during the day, supplied us with an excellent supper, and made amends for our sorry dinner. Some squaws paid us a visit in our camp, with a present of chokeberries in a neat little birch basket; my comrades returned the visit in the evening, leaving me to take care of the camp, and enjoy a solitary pipe, whilst listening to the owls and journalising. The scenery during the day was romantic, the timber consisting of oak, poplar, birch, and a very few pines; at one time we had a distant view of mount Kitahden, it was covered with snow, and appeared about sixty miles distant.

Our first night proved rainy, and as few people are fond of lying under wet bed clothes, we were off bright and early, passed some rapids, which were very bad at this low stage of the water; in one or two places, the fall was full a foot perpendicular, and yet the Indians poled up them with a facility truly astonishing, as these small birch canoes are so light, and appear so frail, that no one who had not seen them managed by an Indian, would ever suppose that they could be conveyed over whirling rapids, with the safety of a common boat in smooth water.

The river widened, and in many places was almost like a lake filled with islands of a fine rich soil, settled by Indians. We also passed some good farms on the main land, belonging to white people; but in general, the Indian farms were quite as comfortable in appearance as those of the whites. At noon, left the main river, and entered the Passedunky, through a narrow channel, with scarcely room for a canoe to pass amid a chaos of rocks: it soon, however, began to widen to more than one hundred yards, deep, and still, banks low, rich, and matted, with a variety of timber and underwood, but heavy hemlocks stamped the prominent character of the scene. Through this still, deep water, we paddled about five miles; then through rapids and rocks a few miles further, to such another place, where we landed to cook our dinner and mend one of the canoes, which had been damaged among the rocks.

While these operations were performing by the Indians, H. and myself hunted for our supper, though our game turned out rather scanty, as we made but indifferent work among the pheasants, and were obliged to fill the deficiency with a bittern, which subsequently was displaced from that honour by better game.

As evening approached, the Indians were just begging that I would halt the next day, as it was Sunday, and my New England friend saying that he was "conscientiously scrupulous" about travelling on the Sabbath, when a fine buck espied us coming up the stream, but mistook us for other deer, as we all laid flat in the bottom of our canoes; nothing could be seen but the muzzle of my rifle, my eyes, and the Indian's paddles; so completely was the poor animal deceived, that he swam within gun-shot before he discovered his mistake; we let him rise the bank out of the water as he made for the thicket, before I sent him a leaden messenger; one of the Indians and he entered the thicket together, and nothing was heard for some moments

but the cracking of brush, and heavy jumps, until the yell of Mitchell Louis proclaimed victory. On coming up, we found he had seized the dying animal, and had received some tolerably severe wounds in the scuffle, before he could use his knife. It turned out one of the largest bucks ever killed in this part of the country, and withal, exceedingly fat. We estimated his weight at near three hundred pounds, and as we were now overstocked with provision, the Indians availing themselves of my intention to remain encamped on Sunday, asked leave to travel all night to take the meat to their friends, on the river below, promising to be back on Sunday night, which, of course, was granted, and they started, leaving us one of the canoes.

H. and myself were now left many miles from any human being, surrounded by a gloomy hemlock swamp. He began collecting fuel and building a camp, while I played the part of cook. A plentiful supper, a social pipe of *esquepomgole*,* and a quantity of hemlock branches for a bed, closed the proceedings of the day.

But Sunday did not end so comfortably; we were visited in the morning by six canoe loads of Indians; they had been up the river hunting, but were not very successful; with them they had the skins of sable and moose; of the latter they had killed four, but how, was to me a mystery; as their guns were among the worst I had ever seen. On asking them what was the greatest distance at which they could kill a moose, they pointed to a spot about thirty yards distant. On receiving a present from us of fresh venison, pork, and biscuit, they departed. After which we were visited by two white trappers, in a *"birch;"* they were in search, principally, of musquash. (Muskrat, *Fiber zibethicus.*) In the afternoon it began to rain, with a strong S. E. wind; fixed our tent in the best manner we could; the deficiency of a tent was again supplied by a blanket spread on two poles, and as we did not expect it to keep us dry, we were not disappointed, though it saved us in a great measure; our baggage and provisions were stowed under the canoe, turned bottom up, among the bushes.

October 12*th.* Our Indian friends returned about dark, having travelled all last night and to day, with the exception of about two hours, spent at breakfast with their wives and sisters. I took a short ramble in the woods back of us, in the afternoon, through the intervals of rain, but could not penetrate far, for mats of dead and falling timber covered with moss, in such a manner, that it was like groping among huge masses of sponge, with a very uncertain foundation. Red squirrels (*Sciurus Hudsonius*) were the only living creatures to be seen; they were numerous, and form the principal food of the sable, which abound on the higher grounds; they pursue the squirrel from tree to tree, with as much activity as Mr. Audibon describes the rattlesnakes; (which, by the bye, is about as great a humbug as ever John Bull was gulled with.)

Heavy rain all night, but having brought with me an oil cloth coverlid, six feet square, we were kept tolerably dry under it, the only inconvenience was, that we had collected scarcely hemlock branches sufficient to keep us out of the puddles beneath; and as it was impossible to keep our fire, or to light it in the morning, we laid in bed until ten o'clock, when the rain ceasing, we cooked our breakfasts, loaded the canoes, and took leave of the *great buck camp;* poled up some very difficult rapids, where the fall was more than five feet in twenty yards.

We went eight miles, and about three o'clock arrived at a saw-mill and settlement of whites; had our dinners cooked at one of the houses, whilst the Indians mended the canoes, which had received some damage; an operation that is performed by covering the cracks with a composition of resin and tallow, while a coal held over and blown, melts it, at the particular places required.

The old lady who cooked our dinners, had several fine daughters, who said they were all heartily sick of the woods, having resided here five years without any chances for husbands, which may fairly be considered a hard case. Made a portage across the mill-dam, and left the last settlement on the Passedunky, where we left all our superfluous baggage. After proceeding some distance, came to an Indian camp of three fires (at each a family); as it was near evening, and they being relatives of our guides, we concluded to stop for the night; the camp was on a low flat point, covered with huge hemlocks, the dark shade of which heightened the romantic effect of a beautiful moonlight night, whilst the fires and dark moving figures enlivened the whole. One of the men was quite communicative, and they dubbed him *lawyer;* he was very anxious to hear all the news from me—said he had heard of an account in one of the Canada papers, of an adjustment of the boundary line of Maine, and wanted to know if we had heard of it, observing that all boundaries were bad that did not follow the courses of the streams: the three men are Passamaquoddys, and are married to Penobscot squaws, who are now on their way to see their relatives at Old Town.

Tuesday, 13*th.* Passed several rapids, rips, and shoots, *schutes*, as they are called by the whites. Hills rise here directly from the river, leaving no bottoms, but are of slight elevation, and covered with heavy timber; larch, hemlock, &c. predominating. Proceeding a few miles

* Esquepomgole is the Penobscot and Passamaquoddy name for the mixture of tobacco and inner bark of red willow, (*Cornus alba,*) it is smoked by almost all the different bands of North American Indians, but, of course, in different languages is known under other names.

further, we opened suddenly on Lake Paoonook, and one of the most magnificent scenes I ever beheld burst upon us: the weather had cleared up bright and calm, the lake's surface was like a mirror, surrounded with mountains; a few clouds were skimming past, but leaving their summits clear above, the shore was lined with huge rocks of all shapes, and heavy timber, having all the varied hues of autumn, and beautifully contrasted, intermixed with the different kinds of evergreens, peculiar to northern regions. Not a sound was heard, except the cackling of log cock, or pileated woodpeckers, and now and then the scream of a loon. Indians and all ceased paddling to enjoy and admire.

Crossed the lake in nearly a north east direction; it is about nine miles in circumference, and very deep, abounding with fine fish, particularly pickerel, some of which we tried to catch, but were unsuccessful. Entered the mouth of a small stream, with low bushy banks, where we were led to believe we should see moose and carabou: H. and myself sat with our guns cocked for fear of making the least noise, whilst Mitchell and Joe, with the stillness of death, paddled up the serpentine course of the stream for several miles, until we came to the mouth of another stream, which we were told was to be the scene of our nightly hunts for moose; accordingly we retraced our way for some distance, so as not to alarm the game with our axes. Encamping about noon, we set all our musquash traps, and slept the remainder of the day. A partridge (*Pheasant*) came within six feet of our fire, and seemed quite uncertain whether we were friends or enemies, but as all our venison was gone, I felt sorry to prove myself amongst the latter; but so it was, and the poor bird formed part of a fricassee with musquash. Several moose birds (*Corvus canadensis* of Wilson) then appeared; they would sit on my coat as it hung on a bush, peck at the partridge which was already picked and hanging up, and eat fat pork off the kettle, which was placed a short distance from the fire; a few sleepless moments were employed in the amusement of trying to catch them with fishing lines, but they were too cunning to swallow the bait without first picking it from the hook. At sundown, made our preparations and started to hunt moose by star light. H. and Mitchell Louis went in one direction towards lake Paoonook, whilst Joe and myself went up stream from the lake: had to make one or two portages over rocky rapids in deep hemlock shade, which deprived us of the little light we had received from the stars. Where the stream was wider, and more open, on getting again into smooth water, Joe gave me my directions, as it was my first essay in this kind of hunting, and required me to be as silent as possible, while he sent the canoe over the dead water, like the silent flight of an owl in search of its prey. The moose repair at night along the banks of the stream, to feed on the small branches of ash, maple, and red willow, and constantly cross from one bank to the other, so that they are as frequently found in the water as along the shores; the Indians told me to watch sharply for their dark forms in the bushes, as well as in the water, as their dark colour is particularly adapted to conceal them in the night; we were frequently startled by the repeated splashes of musquash and aquatic birds. Joe often imitated the long braying call of the female, as it is now rutting season, but without success, for we hunted until midnight without seeing or hearing a single moose. When we returned, found the other canoe back before us with no better success. Took the canoes on shore, turned them bottom upwards, and with our heads beneath them by way of tents, we spent the rest of a clear frosty night.

Next day set some sable traps, which are dead falls made with small logs, and then moved our quarters a mile or two up the western branch; we undertook to hunt on the hills, and I soon discovered the reason why all the hunting is done by the Indians in canoes, for the whites never hunt except in snow shoes;—it is this—the country is crossed in every direction by lakes and streams, so that fires cannot spread here as they do in almost every other part of our country, and consequently the dead timber remains to rot, and is further protected from fire by vast beds of moss; therefore, the woods are full of dead and rotten timber, lying in confused masses among the rocks, all of which being covered with moss, a traveller in such places can never tell whether he is on terra firma, or mounted a considerable distance above it, on a net work of rotten logs, which every now and then let him down some fifteen or twenty feet, without his being able to tell what kind of wild beast may occupy the den beneath him. Added to these difficulties, in other places the heavy snows in winter bend the long slender evergreens in the form of bows, in which position they remain with their tops near the ground; and as this goes on successively each winter, the evil is increased, until a hunter must be as agile as a sable or panther, to get through such spots; in fact, deer and the larger game, except bear, are not found in such places.

At noon, Joe and myself again started in one of the canoes up the stream, until dark, to hunt moose on our way back in the night, whilst H. and Mitchell Louis remained to set musquash traps, and prepare the camp against our return, which was about ten o'clock; saw plenty of moose and carabou signs going up, but none appeared fresh; some of the moose tracks were quite as large as those of oxen. We landed on an extensive cranberry bed, and in a short

time collected as many berries as we could eat, and enough for our companions in camp. Bear signs were plenty, but we could not lose time in hunting them.

Soon after dark, came upon two deer which were in such thick bushes that we found it difficult, owing to the darkness, to make out their position, and did not fire for fear of alarming our larger game: this precaution was, however, unnecessary, as in a few minutes we heard the heavy reports of two muskets, which we then supposed were those of our companions, but on our return, to our disappointment found they had not seen any thing, nor discharged their guns, which threw the Indians into great perplexity to imagine who could be hunting in this part of the country, beside ourselves. After much consultation, they concluded they were Mohawks, as none of the Penobscots or Passamaquoddys had left their town since the middle of summer; in addition to the guns we heard, there were frequent indications of traps having been set for musquash, and the places marked with slips of birch bark, in a particularly neat manner, foreign to the Indians of Maine, and as the Mohawks and Penobscots are not on very friendly terms, my friends became quite uneasy.

The next morning it was clear, frosty, and colder than the preceding, enough so, to form ice in the little puddles, as thick as a quarter of a dollar. Three musquash in the traps, which came just in time for breakfast; and as they are one of the greatest luxuries of the Penobscots, I was pleased to find that my companions thought they were living in clover. The unlucky circumstance of another party having preceded us on the west branch, was a death blow to my little expedition. Since a suspicion has arisen of their being Mohawks, my guides began to waver, and acknowledge they do not know any thing about the country up this stream; and on the east branch, they say I have no chance of success in hunting moose and carabou, or in fact any game, as their tribe has been hunting there most of the summer. To all my inquiries about our course and game, Mitchell Louis, who seems to be the leader of the two, always replied, "don't know bejockly, may be we see um, may be he all gone; we go where you want um go, spose so:" from all of which I drew the inference, that it was spending my time and money to little purpose to keep on with my present guides, unless we could ascend the west branch; but this, both Indians opposed, by saying, the "Mohawks berry bad men, we not want to see um, may be kill um all the game too, den dat not good spose for you;" so that I was obliged, though reluctantly, to give the order "right about," and our canoes once more headed towards lake Paoonook.

Scene on the Passedunky.

ARCHERY.

The value of agreeable amusements has been acknowledged in every age, as the most important advantages to health and happiness are in a great measure subject to their influence. If we find that both are interested and improved by archery, it must prove a sufficient reason for its being esteemed an eligible and useful amusement; and if it can also be shown to possess some valuable qualifications which are not to be found in other diversions, the benefits to be derived from its practice will be still more conspicuous.

Archery, in fact, possesses many excellencies as an exercise, which renders it one of the most useful of the

gymnastic sports. It is adapted for every age and every degree of strength; and the degree of exertion can always be proportioned, by increasing or diminishing the power of the bow employed. It is not necessarily laborious, as it may be relinquished as soon as it becomes irksome or fatiguing.

It is recorded, that a king of Persia offered a reward to whoever could invent a new pleasure. Had such an inducement been held forth by the ladies of the present day, he who introduced Archery as a female amusement, might deservedly have claimed the prize. It is unfortunate that there are few diversions in the open air, in which women can join with satisfaction, or without overstepping those bounds which custom and innate delicacy have prescribed to the sex; and as their sedentary life renders exercise necessary to health, it is to be lamented that suitable amusements have been wanting, to invite them into the open air. Archery, however, is admirably calculated to supply this deficiency, and in a manner the most desirable that could be wished.

The bow is the most ancient and universal of all weapons, and has been found in use amongst the most barbarous and remote nations. In the days of David, the practice of this instrument of warfare appears to have been so general, that it is constantly made use of in the Bible as a figure of speech. Its earliest application, however, was for the purpose of procuring food; and notwithstanding the celebrity of the English archers, it is a question among antiquaries whether it was ever used by the Anglo-Saxons and Danes, except for the chase, or as an amusement. All authorities agree, that it never was considered as a formidable weapon of offence in that country, until after the Norman conquest, who introduced the general use of it and the crossbow among their military retainers and serfs; the difference in the use of which is well exemplified in a simile made by the celebrated Bayle: "Testimony," says he, "is like the shot of a long bow, which owes its efficacy to the force of the shooter, whereas argument is like that of the crossbow, equally forcible, whether discharged by a dwarf or a giant." It is now wholly relinquished among civilized nations as a hostile weapon, but still retains a prominent rank as affording a healthy and rational amusement.

This exercise, which is exceedingly common in Europe, and more particularly in Great Britain, is scarcely known in this country; the only association of Bowmen in the United States, as far as we can learn, being in this city. We trust, however, that this fashion may be universally cultivated and approved, and that we may see the time when, with Statius, it will be said

"Pudor est nescire sagittas."

Every information respecting the use of the Bow, can be readily obtained from the "Archer's Manual," a little work published by Mr. Hobson, of Philadelphia, under the superintendence of the "United Bowmen." Shooting apparatus can likewise be obtained without much difficulty, either in this city, or may be imported from Europe.

We have been led into these remarks, from a wish to see this useful and agreeable amusement become general in our country, where there is such a dearth of invigorating exercises, with the exception of those of the chase. The association to which we have alluded, held their third annual prize meeting on the twenty-second of October, when the first prize, a silver bugle, was awarded to Mr. X. for the greatest value of hits, and the second, a silver grease box, for the hit nearest the centre of the target, to Mr. C. From the unfavourable state of the weather, the shooting was far from being equal to that on many of the ordinary practice meetings of the association.

MISCELLANY.

A PHEASANT was chased by a hawk, a few days since, from a swamp, and took refuge in the chimney of the dwelling-house, on the farm of Mr. E. Seeley, in Cumberland county, N. J., and descended into the parlour, whence it was taken, and kept alive for several days.

The same gentleman has a domestic fowl, which produces, regularly, eggs with double yolks, and about the size of those of a turkey.

IN the following anecdote, *Hogg* tells a monstrous story, with an honest simplicity, that makes one laugh:—

It's a good sign of a dog when his face grows like his master's. It's a proof he's aye glowerin' up in his master's een, to discover what he's thinking on; and then, without the word or wave o' command, to be aff to execute the wull o' his silent thocht, whether it be to wear sheep or run doon deer. Hector got sae like me, afore he dee'd, that I remember when I was owre lazy to gang to the kirk, I used to send him to take my place in the pew—and the minister never kent the difference. Indeed he ance asked me, next day, what I thocht o' the sermon; for he saw me wonderfu' attentive amang a rather sleepy congregation. Hector and me gied ane anither sic a look! and I was feared Mr. Paton would hae observed it; but he was a simple, primitive, unsuspectin auld man—a very Nathaniel without guile, and he jealoused naething; tho' both Hector and me was like to split; and the dog after laughing in his sleeve, for mair than a hundred yards, could stand't nae langer, but was obliged to loup awa owre a hedge into a potato field, pretending to have scented partridges.

RED FOX.

RED FOX.

CANIS (VULPES) FULVUS.

Renard de Virginie. Palisot de Beauvois. *Bul. soc. Phil.*—*Large Red Fox of the Plains.* Lewis & Clark.—*Red Fox.* Sabine. *App. to Franklin's Journey*, 656. Godman, vol. i. 276.—*American Fox.* Richardson, *Faun. am. bor.* 91.—*Canis fulvus*, Desm. *Mamm.* 203. *Icon.* F. Cuv. *Mam. Lithog.*—J. Doughty's *Collection.*

The various species of the Fox have been classed by most naturalists in the genus *Canis* Lin. together with the wolf and jackal. From these animals, however, they differ in many important particulars. In the dogs, the pupil of the eye is circular and diurnal; whilst in the Fox it is linear and nocturnal. The tail is also more bushy, the nose more pointed, and the scent stronger than in the former. There is likewise a very marked dissimilarity in many of their habits and manners; thus the Fox burrows, which the dog does not, the voice of the former is rather a yelp than a bark, &c. From these considerations, some naturalists have wholly separated them from *Canis* under the title of *Vulpes;* and others, though retaining them in that genus, make them a subdivision or subgenus.

The Fox belongs to the *Digitigrada*, or second tribe of the *Carnivora*, including such animals as support themselves in walking on the extremities of the toes. The digitigrade animals are subdivided, 1st. into such as have one tubercular or bruising grinder in the upper jaw; are destitute of a coecum, and whose body is very little larger than their head. This subdivision includes the genus *Mustela* of Linné, which has been split into several well marked genera, by more modern naturalists, as *Mustela*, L. *Putorius*, Cuv. *Mephitis*, Cuv. *Lutra*, Storr. 2d. Such as have two flat tubercular teeth in the upper jaw, and are furnished with a small coecum; these are, *Canis*, Lin. *Vulpes*, Gesner. *Viverra*, Cuv. *Genetta*, Cuv. *Paradoxurus*, Cuv. *Herpestes*, Illig. *Suricata*, Desm. *Crossarchus*, F. Cuv. 3d. Those which have no tubercular tooth in the lower jaw, which includes *Felis*, Lin. *Hyæna*, Storr.

Most of the species of the Fox have the same cunning and sagacity, the same eagerness after prey, and commit the same ravages among game, birds, poultry, and the lesser quadrupeds. They are exceedingly fond of honey, and will attack hives and the nests of the wild bee, for the sake of the spoil; in these exploits they frequently meet with so rough a reception as to force them to retire, that they may roll on the ground, and thus crush their numerous and vindictive assailants; but the moment they have effected this, they return to the charge, and are generally successful. Foxes will also eat any sort of insect, fruit, &c. and are very destructive in vineyards. This latter propensity was observed at a very early period. "Take us the Foxes, the little Foxes that spoil the vines, for our vines have tender grapes."*

But they do not limit themselves to the quantity of food necessary to appease the cravings of their appetite at the moment. Instinct appears to warn them, that although they may then be revelling in plenty, that future wants must also be provided against. Hence, when they invade a poultry yard, they kill all they can, and successively carry off every piece, concealing them in the neighbourhood for a supply in time of need. Captain Lyon, in speaking of this trait of character in the arctic Fox, observes, "their first impulse on receiving food, is to hide it as soon as possible, even though suffering from hunger, and having no companion of whose honesty they are doubtful. In this case snow is of great assistance, as being easily piled over their stores, and then forcibly pressed down by the nose. I frequently observed my dog-fox, when no snow was attainable, gather his chain into his mouth, and in that manner carefully coil it so as to hide the meat. On moving away, satisfied with his operations, he, of course, had drawn it after him again, and sometimes with great patience repeated his labours four or five times, until, in a passion, he has been constrained to eat his food, without its having been rendered luscious by previous concealment."†

Foxes are very fond of basking in the sun; in fact their general time of rest is in the day time, during which period they appear listless and inactive, without they are excited by fear or some other stimulus. They sleep in a round form like the dog, and also resemble that animal in the ease with which they are awakened, it being almost impossible to come on them unawares, for even when they are in an apparently sound sleep, the slightest noise, made near them, will arouse them. The moment night sets in, all their faculties are awakened; they then begin their gambols and depredations, continuing in rapid and almost unceasing motion until day-break. Most, if not all, the species live in burrows; these are generally composed of several chambers, and are provided with more than one entrance, by which they may make their escape in cases of extremity. One of the great characteristics of the Fox is, their extreme prudence, and almost matchless cunning, which are exemplified, not only in their stratagems to obtain prey, but also in their numerous wiles in order to avoid their pursuers. Dr. Richardson states, that the arctic Fox appears to have the power of decoying other

* Solomon's Song, ii. 15.

† Lyon's Private Journal.

animals within his reach, by imitating their voices: this is confirmed by Captain Lyon, who states, "that while tenting, we observed a Fox prowling on a hill side, and heard him for several hours afterwards in different places, imitating the cry of a brent goose." Crantz, in his History of Greenland, informs us, that this species also exert an extraordinary degree of cunning in their mode of obtaining fish. They go into the water, and make a splash with their feet in order to excite their curiosity, and when they come up, seize them. The mode in which some species entrap water-fowl, is also extremely ingenious. They advance a little way into the water, and afterwards retire, playing a thousand antic tricks on the banks. The fowl approach, and when they come near, the animal ceases, that he may not alarm them, moving only his tail about, and that very gently, till the birds approach so near that he is enabled to seize one or more.* But these are trifling displays of ingenuity in comparison to some which are related of these animals. Thus, Pliny says, that such is the sagacity of Foxes that they will not venture on any piece of ice until they have ascertained its thickness and strength by applying their ear to it. A late traveller in Norway, we believe Capell Brooke, states that the Foxes of the North Cape, take sea-fowl by letting one of their companions over the edge of a cliff by his tail, and where this does not enable them to reach their prey, that a line is formed of no inconsiderable length, by seizing each other's tails in their mouths. That credulous author, Pontoppidan, also informs us, "that a certain person was surprised on seeing a Fox near a fisherman's house, laying a parcel of fishes' heads in a row; he waited the event, the Fox hid himself behind them, and made a booty of the first crow that came for a bit of them."

This character of cunning and extreme prudence in the Fox, renders him extremely difficult to be destroyed, or taken. As soon as he has acquired a little experience, he is not to be deceived by the snares laid for him, and the moment he recognizes them, nothing can induce him to approach them, even when suffering the severest pangs of hunger. The scent which the Fox leaves behind him, being exceeding strong, he appears sensible of that circumstance, and uses every artifice to bewilder his pursuers, and throw them out of their track. He generally takes advantage of the wind, and often crosses rivers, swims down small streams or runs along the top of a wall, in order to interrupt the continuity of the scent, and puzzle the dogs. This timid and prudential character, however, completely disappears in the female when she has young ones to nurse and defend. Maternal instinct, which is forcibly felt by all species of animals, and effaces for a time their natural propensities, is peculiarly striking in the Fox. There is no sentiment so universal in its nature, and so wholly disinterested as this; none in which personal danger is so completely unheeded and disregarded. A mother never hesitates an instant in facing the most appalling danger, or enduring the utmost privations, risking every thing, even life itself, for the preservation of her infant offspring. She that at other times was timid and gentle, now becomes bold, fierce, and resolute; unshaken by all that is trying, undeterred by all that is menacing. Thus the female Fox watches with unceasing care over her young, assiduously providing for all their wants, and exhibiting a fearlessness wholly different from her usual disposition. Goldsmith relates a remarkable instance of this parental affection, which he says occurred near Chelmsford, in England. "A she Fox that had, as it would seem, but one cub, was unkennelled by a gentleman's hounds, and hotly pursued. The poor animal, braving every danger, rather than leave her cub to be worried by the dogs, took it up in her mouth and ran with it in this way for some miles. At last, taking her way through a farmer's yard, she was assaulted by a mastiff, and at length obliged to drop her cub."

The Fox goes with young about three months, and the litter is composed of from three to eight. The cubs, like puppies, are covered with hair, and are born blind. They remain in the burrow about three or four months, and soon after abandon their parents; at two years of age their growth is completed.

As the vicinity of the Fox is productive of mischief and destruction, and as its cunning and sagacity augment its resources against danger, its chase has always afforded a subject of amusement and occupation. Many crowned heads have been passionately devoted to this sport. Among others, Louis XIII. of France, gave it the preference over all others, and brought to perfection the employment of the hound, instead of the terrier, which had heretofore been constantly used for this purpose. This invigorating and healthful exercise is pursued with great ardour in some parts of our country, particularly in the southern States. From Custis's Recollections of Washington, it appears that previous to 1787, he was a keen Foxhunter; this bold and animating sport being well suited to his temperament, and his fondness for equestrian feats. His habit was to hunt three times a week: as is well known, Washington was a skilful and fearless rider, and ridiculed the idea of being unhorsed, provided the animal kept on his legs; he always followed the hounds through all difficulties; was invariably in at the death, yielding to no man the honour of the brush.

* Charlevoix's Travels, i. 207.

Besides the chase, various means are resorted to, for the purpose of destroying these mischievous animals, which, though sometimes successful, often fail, from their extreme cunning, which enables them to avoid the best concerted schemes for their capture. Even when taken in a steel trap, it is said that they will sacrifice a limb to escape—

> "by the indented steel
> With gripe tenacious held, the felon grieves,
> And struggles, but in vain, yet oft 'tis known,
> When every art has fail'd, the captive Fox
> Has shar'd the wounded joint, and with a limb
> Compounded for his life.—*Somerville. Chase.*

The fur is valuable and much sought for, particularly that of the black or silver Fox, which sells for six times the price of any other that is produced in North America. La Hontan speaks of a black Fox skin as being, in his time, worth its weight in gold.

The different species of Fox are involved in much confusion. There are few animals of which travellers have spoken more, and yet there are scarcely any whose history has been treated of with less precision and method. As far as our researches have extended, the following appear to be the well determined species and varieties. As regards those of North America, we have followed Dr. Richardson, who has paid particular attention to them, and whose acuteness and industry deserves the thanks of every naturalist.

1. Canis (Vulpes) Vulgaris. Common Fox.
   Var. a. V. alopex. Brant Fox.
   b. V. crucigera. European cross Fox.
2. V. lagopus. Arctic Fox.
   Var. a. V. fuliginosus. Sooty Fox.
3. V. fulvus. Red Fox.
   Var. a. V. decussatus. American cross Fox.
   b. V. argentatus. Black, or silver Fox.
4. V. Virginianus. Grey Fox.
5. V. cinereo-argentatus. Swift Fox.
6. V. corsac. Corsac Fox.
   Var. a. V. Karagan. Desert Fox.
7. V. Niloticus. Egyptian Fox.

There are a variety of other nominal species which we have omitted, not being able to satisfy ourselves respecting them. It is astonishing how little care is taken by travellers, to ascertain the proper names of the animals they describe in their journals, even when the means of information are within their reach. The history of the various species of the animal kingdom can only be the result of a long series of observations, which it is utterly impossible for a single individual to make. Hence, if travellers describe the same animal under different names, it loads science with a host of unnecessary species, and retards, instead of advancing, the progress of inquiry.

The red Fox is an inhabitant of most parts of our continent: but appears to occur in the greatest numbers to the north; they are so abundant in what are termed the fur countries, that Dr. Richardson says, that about eight thousand are annually imported into England from thence. They are, however, by far too numerous in the United States, giving manifest proofs of their presence in their depredations on the poultry yards.

The general colour of this species in its summer coat, is "bright ferruginous on the back, head, and sides, less brilliant towards the tail; under the chin white; the throat and neck a dark grey; and this colour is continued along the first part of the belly in a stripe of less width than on the breast; the under parts, towards the tail, are very pale red; the fronts of the fore legs and feet are black, (or dark brown,) and the fronts of the lower parts of the hind legs are also black; the tail is very bushy, but less ferruginous than the body, the hairs mostly terminated with black, and more so towards the extremity than near the root, giving the whole a dark appearance; a few of the hairs at the end are lighter, but it is not tipped with white."—*Sabine.* The colour of the tip, however, differs much; in some specimens, the white being very distinct, whilst in others this tint is scarcely discernible. This summer coat is long, fine, and brilliant; as winter approaches it gradually becomes longer and denser, even the soles of the feet being completely covered with fur, which wears off in the summer, leaving naked callous spots.

It bears a strong resemblance to the common Fox of Europe, and was considered identical with that species until De Beauvois pointed out its differences. These, as stated by Dr. Richardson, are, that the American species has longer and finer fur, and is more brilliant in its colours. Its cheeks are rounder, its nose thicker, shorter, and more truncated. Its eyes are nearer to each other. Its ears are shorter, the hair on its legs is longer, and the feet more covered with fur, its tail is also fuller and finer. The colour of the breast is more inclined to a grey, and that of the anterior part of the legs of a dark brown, being nearly black. Desmarest likewise mentions, that there is a difference in the form of the skulls of the two species.

As there still exists no slight difference of opinion, as to whether this animal is a native; many persons considering that it is merely the European species which has become naturalized, whilst others appear to think that there are two distinct varieties, closely resembling each other, the one native and the other introduced; we will examine the grounds of the various hypotheses, before entering on a description of the habits and manners of the subject of our sketch. In doing this, we have thought it would be satisfactory to our readers, to cite the various authorities we have had occasion to consult on each side of the question.

Pennant*, under the head of European Fox, observes, "It inhabits the northern parts of North America. This species gradually decreases to the southward in numbers and size; none are found lower than Pennsylvania. They are supposed not to have been originally natives of that country. The Indians believe they came from the north of Europe, in an excessive hard winter, when the sea was frozen. The truth seems to be, that they were driven in some severe season from the north of their own country, and have continued there ever since. The variety of British Fox with a black tip to the tail, seems unknown in America."

Kalm says, "The red Foxes are very scarce here, (New York); they are entirely the same with the European sort. Mr. Bartram and several others assured me, that, according to the unanimous testimony of the Indians, this kind of Fox never was seen in the country before the Europeans settled in it. But of the manner of their coming over, I have two accounts. Mr. Bartram and several other people, were told by the Indians, that these Foxes came into America soon after the arrival of the Europeans, after an extraordinary cold winter, when all the sea to the northward was frozen. But. Mr. Evans and some others, assured me that the following account was still known by the people. A gentleman in New England, who had much inclination for hunting, brought over a great number of Foxes from Europe, and let them loose in his territories, that he might be able to indulge his passion for hunting. This, it is said, happened at the very beginning of New England's being peopled with European inhabitants. These Foxes were believed to have so multiplied, that all the red Foxes in the country were their offspring."† It is due to Kalm to state, that he considers neither of these accounts as satisfactory. Custis states, "The Foxes hunted fifty years ago were grey Foxes, with one exception, this was a famous black Fox;" and in a note says, "The red Fox is supposed to have been imported from England to the Eastern Shore of Maryland, by a Mr. Smith, and to have emigrated across the ice to Virginia, in the hard winter of 1779-80, when the Chesapeake was frozen over."‡

A correspondent in the American Sporting Magazine says, "I think it probable that they were brought over and turned out at other places, and at very early periods. In 1789, when quite a boy, I was at the death of the first red Fox killed in Perry county, Pennsylvania. Not a person present, or any one who saw it for some days, had ever seen or heard of an animal of the kind. At last it was shown to a Mr. Lenarton, an old Jerseyman, who pronounced it an *English Fox*. He said the red Fox was imported into New York from England, by one of the first English governors, who was said to be a great sportsman, and turned out on Long Island, where they remained for many years, but at last made their way on the ice to the main land and spread over the country. The red Fox and Canada hare are migrating south and west."*

In another letter from a correspondent in the same work the writer observes, "with us (Virginia) he is supposed to have been brought from the continent—Germany, I think—and not from the island of Great Britain. I remember well, when the first red Fox was seen in my native part of Virginia, (in Goochland, on James River,) and the sensation it created among sportsmen. This was about fifteen years ago."†

Both the above writers also state, that the grey Fox (*V. Virginianus*), disappears on the appearance of the red. This, however, is not the case, as in many parts they are equally numerous.

Such, as far as we have been able to investigate, are the proofs, that the red Fox is identical with the common Fox of Europe, being in fact descended from it. On the other hand, many writers, as F. Cuvier, Desmarest, and Harlan, admit and describe the red Fox as a distinct species, but at the same time state that the European Fox is also an inhabitant of North America. Dr. Richardson says, the latter is probably a native of New Caledonia, and further observes, "Several of the voyagers who have visited the Atlantic coast of North America, mention two kinds of red Fox skins in possession of the natives; the one having a fine, long, silvery fur, of a reddish yellow colour, (*C fulvus?*) the other of a smaller size, having shorter and coarser fur and less lively tints of colour, (*C. vulpes?*) I think it very probable that an investigation into the characters of the American Foxes, will show that the reddish Fox of the Atlantic States is a variety of the *C. cinereus*, (Q. does Dr. Richardson mean the grey Fox by the *C. cinereus?*) which has been mistaken for the European Fox."‡

From the above contradictory and unsatisfactory accounts, we have been led to believe that there is but one species of red Fox in the United States, and the country north of them; this opinion is strengthened by much collateral evidence. Thus, Dr. Richardson, expressly states, "It, (the common Fox,) does not exist in the countries north of Canada, lying to the eastward of the Rocky Mountains, and consequently did not come under our

* Arctic Zoology.
† Travels in North America.
‡ Recollections of Washington, (extract from Sporting Mag.)

* American Turf Register and Sporting Magazine, i. 74.
† Ibid. i. 197.
‡ Richardson, Faun. am. bor. 97.

notice on the late expeditions."* This at once overthrows Pennant's account, and proves that the Fox he described as the same with the European, was in reality the *V. fulvus*. As to the first tradition, given by Kalm, none of the Indian tribes inhabiting New England could, possibly, possess any knowledge of the state of the sea to the north, as to this day, the tribes dwelling even 20 degrees nearer its shores, are wholly ignorant of it; added to which, the intermediate nations have been, from time immemorial, at war with their neighbours. As regards the introduction of common Foxes into our country from Europe, for the purposes of hunting, we confess we are sceptical, though we cannot absolutely deny the fact. But, even granting that they were thus introduced, it would by no means account for the great numbers of these animals which are now to be found, without allowing that their prolific powers have wonderfully increased by their change of climate. There is some discrepancy of opinion among authors, as to the colour of the tip of the tail in the common Fox: Linnæus, and most other writers, say it is white, whilst Desmarest asserts it is black. This part in the red Fox, as far as we can ascertain, is invariably whitish or white, and never black.

Since we commenced this investigation, we have examined a great number of skins of red Foxes, and invariably found all those which were acknowledged to be American, of one species, the *fulvus*. Without relying on our own researches alone, we have asked the opinion of others, and have found that our ideas were confirmed by those who have had ample opportunities for information on the subject. Mr. T. Peale permits us to state, that during his excursions, and among the various specimens he has seen, he has never met with the common Fox as occurring in the United States. None of the cabinets in this city even contain a specimen of the *V. vulgaris*.

The red Fox is about two feet, to two feet and a half, in length; the tail, with the fur, about sixteen inches; height, from fourteen to eighteen inches. It burrows in the summer, and in winter sometimes takes shelter in the hollow of a tree, or under one which has fallen. Their usual haunts are in dense thickets, where they are with difficulty followed. The female brings forth in the spring, and has from four to five at a litter. The young are covered at birth with a soft downy fur, of a yellowish grey colour, the ferruginous hair not appearing till they are from five to six weeks old. When taken at an early age, this species may be domesticated to a certain degree, though they always retain some of their savage propensities. Dr. Richardson says he procured four cubs, a fortnight old, which were thought by the hunters to be the cross variety, but which eventually proved the common red Fox. These little creatures began very early to burrow in the sandy floor of the house in which he kept them, and to conceal themselves during the day. They, however, were very tame, and would come on being called, taking food from the hand and carrying it to their places of concealment, never eating when overlooked.

A young one was also suckled at the Philadelphia Museum, by a cat, who continued to nurse it for several weeks, when it was killed by a fall. They are unpleasant pets, from the fetor of their urine somewhat resembling that of the skunk. The red Fox, besides his depredations on the poultry yards, likewise preys on smaller animals of the rat kind, rabbits, &c.; he is also fond of fish, and, in fact, rejects no kind of animal food that comes in his way. His flesh is rank and ill-tasted, and is eaten only through necessity.

The red Fox resembles his European congener, in his craftiness and cunning, exhibiting the same wiles to escape pursuit, and the same instinctive cautiousness of traps and snares. It is said, that the red Fox of the present day is killed in a much shorter time, and with more certainty, than formerly. When pursued, they are more apt to forsake their haunts, and run for miles in one direction, than the grey, which is often killed, even after a severe chase, near the place from which it first set out. In this respect, the latter is more analogous to the European. The red Fox hunts for its food chiefly in the night time, but is also frequently seen in the day. In the winter season their tracks are frequent on the borders of lakes and ponds, which they quarter somewhat like a pointer dog. They turn aside to almost every stump or twig appearing above ground, and void their urine on it.

Various methods are made use of to entrap these suspicious animals, as steel or box traps, and falls made of logs, &c.; but much nicety is required in setting them, or the Fox will avoid them. A very neat and successful mode of fixing a steel-trap has been described to us. After having fixed on a place which they frequent, the trap is to be opened and its exact form traced on the ground, and as much earth removed as will contain it without pressure; the sod removed from the top is to be laid over it, and the lines of separation covered with mould, and grass stuck in it. A bait of cheese is to be placed above, and in two or three places in the neighbourhood, and it is better to bait the spot in which the trap is set, for some days previous, to remove all fear. Some of the best trappers ascribe their success to the use of assafœtida, castoreum, and other analogous substances, with which they rub their traps, and small twigs set up in the neighbourhood, alleging that

* Richardson, Faun. am. bor. 97.

these substances invariably attract the animals. The box-trap has occasionally proved successful. The best plan is to vary the modes from time to time.

CANIS (VULPES) FULVUS.

Var. a. Decussatus.

AMERICAN CROSS FOX.

Renard barré ou Tsinantonque. Theodat. *Canada*, 745.—*European Fox, var.* b. *Cross Fox.* Pennant, *Arct. Zool.* i. 46.—*Canis decussatus.* Geoffroy, Desmarest, &c.

The American *decussatus* appears to bear the same relation to the red Fox, as the European *crucigera* does to the common Fox. The Indians, observes Dr. Richardson, consider it as a mere variety of the red Fox, and in fact, the gradations of colour between characteristic specimens of the cross and red Fox are so small, that the hunters are often in doubt with respect to the proper denomination of a skin.

The following description of a very characteristic specimen, is given by Mr. Sabine.

"The front of the head grey, composed of black and white hairs, the latter predominating on the forehead; ears covered with soft black fur behind, and with long yellowish hairs within. The back of the neck and shoulders pale ferruginous, crossed with dark stripes; one extending from the head over the back, the other passing it at right angles over the shoulders; rest of the back grey, composed of black fur, tipped with white; the sides pale ferruginous, running into the grey of the back; the chin and all the under parts, as well as the legs, black; a few of the hairs being tipped with white; the under part of the tail and adjacent parts of the body, pale yellow; the grey colour of the back extends to the upper part of the tail at its commencement, the rest of the tail dark above and light beneath, tipped with white."

F. Cuvier is inclined to think, that it is a variety of the *argentatus*, and Godman supposes that it may possibly be a mule produced between that Fox and the red. The fur of this species is valuable, and is much more esteemed than that of the red Fox, even where they are of equal fineness.

CANIS (VULPES) FULVUS.

Var. b. Argentatus.

BLACK, OR SILVER FOX.

Renard noir. Theodat. *Canada.* 774.—*European Fox, var.* a. *black.* Pennant. *Arc. Zool.* i. 46.—*Renard noir ou argenté.* Geoff. *Collec. de Mus.*—*Renard argenté.* F. Cuvier, *Mamm. lith. livr.* v.—*Canis argentatus.* Desmarest, *Mamm.* 203. Sabine, Harlan.—*Black, or Silver Fox.* Godman, i. 274.

This variety is as rare in America as the analogous one in Europe, a greater number than four or five being seldom taken in a season, at any one post of the fur companies. Capell Brooke observes of the European variety, "The silver, or black Fox is so rare, that seldom more than three or four are taken in the course of a year on the Lofoden Islands, and I have never heard of its being met with in any other part of Norway." Pennant seems to think that this may arise from their superior cunning, for he remarks "that the more desirable the fur is, the more cunning, and difficult to be taken, is the Fox that owns it." This, however, is erroneous, it depending solely on the rarity of the animal. Dr. Godman says, it more closely resembles the grey Fox than any other, differing from it only, in the colour and copiousness of its fur.

This Fox is sometimes of a rich lustrous black colour, with the exception of the end of the tail, which is white But it varies much in this particular. "A fine specimen, preserved in the Hudson's Bay Museum, has the head and back hoary, most of the long hairs on those parts being white from the tip for a considerable way down. The downy fur at the root of the longer hairs, has a dark blackish brown colour. The nose, legs, sides of the neck and all the under parts, are dusky, approaching to black. The tail is black. Its ears are erect, triangular, but not very acute, and are covered with a soft fur of a brownish black colour. In some individuals, the fur, which in most parts is hoary, has a shining black colour, unmixed with white, from the crown of the head to the middle of the back, and down the outside of the shoulders, being an approach to the cruciform arrangement."*

This Fox resembles its kindred, in the unpleasant odour it diffuses. F. Cuvier mentions that its smell is very disagreeable, but differs somewhat from that of the common Fox of Europe. The black Fox inhabits the same districts as the red Fox.

* Richardson, O. C. 95.

NOTE.—As we are very solicitous that the Natural History of our native animals should be extricated from the confusion and uncertainty in which it still remains; we would feel under obligations to any of our readers, who will furnish us with such information as they may possess respecting them. We are led to make this request, from a desire to render our work a repository of facts in Natural History, which will always serve for useful reference. As regards the opinion we have expressed with respect to the red Fox, we shall be very willing to acknowledge our error, on the sight of the skin of the common Fox, killed in the United States, and will feel much indebted for such an opportunity of settling the question.

WINTER WOLF-SKALLS,

Or the manner of destroying Wolves in Sweden; with Anecdotes of these ferocious animals.

Wolf-skalls are not unfrequent during the winter, in the vicinity of Stockholm. These, as I have said, are conducted at that period of the year in a very different manner to what is usual in the summer time. I had hoped to have been a spectator on one of these occasions, but unfortunately no *chasse* took place during my stay in the capital.

There is a skall-plats, or hunting place, for Wolves, situated at less than four miles from Stockholm. This is an area marked out in the forest by a pathway of about four paces in width. It is in the form of a sugar loaf, and two thousand four hundred fathoms, or four thousand eight hundred yards in circumference. In the centre of the area, the lure, or carrion, to attract the Wolves, was deposited; at its upper end are five screens, or lodges; these are intended for the accommodation of the sportsmen when a skall takes place; that in the centre is reserved for the use of such parts of the royal family as may think proper to participate in the amusement.

As soon as the snow falls, this skall-plats is watched both night day by persons appointed for the purpose. When, therefore, it is discovered by the tracks that a sufficient number of Wolves are congregated at the carrion, a singular expedient is adopted to prevent those animals again retreating from the area.

This is effected by extending a piece, or rather many pieces of canvass (Jagttyg,) on poles previously driven into the ground for the purpose, around the whole skall-plats. On this are painted, in very glaring colours, the heads of men, animals, &c. If the Wolves be once surrounded by this artificial barrier, it is said that the hideous figures, thus dangling in the wind, usually deter those animals from leaving the place.

As every thing is in readiness on the spot, this operation ought not to occupy more than two hours: when it is completed, information is sent off to the authorities, and the requisite number of people to form the cordon is instantly ordered out.

When the men are assembled, a line of circumvallation it at once formed about the area. The nets are now set up around the smaller end of the skall-plats; these may be about seven feet in height, and may extend for one thousand, or one thousand five hundred paces in length. The people at this point remain stationary, whilst those who are placed at the broader extremity of the figure advance upon their comrades. There are several pathways across the plats, cut through the trees, and on reaching these the driving division halts and rectifies disorders. Thus the Wolves, or other wild beasts, are gradually forced towards the skreens, or lodges, where they are, of course, readily slaughtered.

The above plan of killing Wolves, in the winter season, is adopted in many parts of Sweden.

Mr. Greiff has treated rather fully upon the several ways in which Wolves may be destroyed. I subjoin a few of that gentleman's observations regarding the winter-skalls.

"The inducement to form a place of lure, must be derived from the reports which come in to the governor from the county, of the damage done by wild beasts during the summer.

"When the Öfwer Jagmastare, or head forest ranger, has received intelligence on the preceding point, he examines the woods in those tracts where the Wolves have done most damage, and have probably whelped, and makes choice of the most suitable spot on which a place of lure can be formed.

"A suitable spot means one which is covered with a tolerably thick wood of large trees, especially spruce, where the ground is undulating, and which contains fens and mosses; and of such great extent, that the pathway (Skallgatan) does not pass over fields or plains which prevent the tracing of the animals, after a fall of snow or sleet. The wood must be left quiet from passengers, or woodsmen, during the time of hunting, or, in other words, the winter season; and should be situated near the centre of the parish, whose peasants are to form the skall. A cottage should be near the place, that the under-huntsmen may find quarters, and have opportunity to call up in haste the men employed to fasten on the Jagttyg, or hunting-cloth, by which the daily watch of a whole division of the country for this purpose will be avoided.

"The hewing down of the trees, for the purpose of forming the skall-plats, or place of lure, should take place in the month of August or September, when the assistance of the authorities must be required. If the wood is not of the thickest and heaviest kind, the skall-plats should be ready in two to three days, with thirty to forty labourers per day."

Mr. Greiff then describes the manner in which the skall-plats is to be prepared; but as the particulars would probably prove little interesting to the reader, I have thought it best to omit them.

Mr. Greiff goes on to say: "When the skall-plats is ready, it must be kept undisturbed by the woodsmen and from all noise.

"In the month of October, when the peasants begin to kill their worn out horses, the head ranger gives them inti-

mation that they shall, in conformity to orders from authority, transport them to the hunting or lure-place, and give the necessary orders for their skinning, and also that a huntsman is at hand to direct that the carrion should be laid in the proper place.

"As soon as the ground is frozen, the hunting-cloth is brought out, which must be smoothed well down and beaten with fir branches, so that all shall be in order for the first falling snow; for the hunts which can be formed by the traces on the first snow, or before Christmas, are the surest.

"Two huntsmen must be ordered to keep watch at the skall-plats, the day on which the snow has fallen; and they should go round it three times a day, morning and evening, and once during the night, with a lantern of tin, made so that it only throws light from the bottom; the marks of the animals going in and out are to be carefully noted each time, and written down in a journal, and whether they follow each other in numbers, or go singly.

"An experienced huntsman will soon discover at what time the animals visit the carrion; the 8th, 11th, and 14th day is usually the period, after they have once eaten of it. It happens that Wolves, early in winter, get into the skall-plats and lie there several days, without their traces being discovered; and on such occasions, it is necessary to drive them gently out again, in order to ascertain their number.

"Each time of going round the area, every track is to be swept out with a long broom; and if the huntsman at any time have occasion to step out of the pathway, (Skallgatan,) the marks should be immediately swept out. Birds of prey, such as ravens and crows, must not be frightened away, because they entice the wild beasts by their cries, and give them confidence.

"The huntsmen examine each his side of the skall-plats: should it be found, when they meet, that traces of animals having entered are sufficiently numerous to fasten up the hunting-cloths, the men for that purpose are called out immediately, and the fastening is to be executed with all possible expedition, and the whole ought to be finished within two hours.

"The fastening ought to commence either at the top or at the bottom of the skall-plats, where two rolls of cloth should be lying ready: one man unloosens the roll—the other carries the pole on which it is wound:—they advance along the line, unwinding as they go. The roll should be wound round the pole, so that it unwinds correctly and easily. A third man fastens the cloth round the end of each stake. When the hunting-cloth is fastened up, the men so employed return each along his allotted distance, and rectifies what he finds amiss: the pieces of cloth ought to hang three feet from the ground. The huntsmen then reconnoitre the skall-plats, to ascertain whether the animals have escaped during the fastening; if that be the case, the hunting-cloths are immediately taken down, wound up, and laid in their places.

"When it is found that the animals are enclosed, messengers, who ought to be always in readiness, should be immediately despatched, to apprise the people of the time of assembling for the hunt, and of the number required, according to the size of the skall-plats, reckoning eight, and, at the utmost, ten, hunting paces between each person.

"From the moment it is ascertained that the animals are enclosed, and until the hunt takes place, the utmost silence should be observed at and about the skall-plats.

"When the people are assembled, and the numbers communicated to the head ranger, they are to advance silently to the skall-plats: they are to be formed in two divisions, either at the top or at the bottom. A huntsman goes before each division, and a huntsman after. They place each peasant in his proper situation, and inform him what he is to attend to, namely, to stand on the outside of the hunting-cloths; to remain silent; and not to go from his post: but if the animals show themselves, he is to shake and strike against the cloths with his hunting-staff or spear.

"The skalfogdar, or subordinate officers of the hunt, are to be chosen from trusty people, who are acquainted with the locality; soldiers are preferable: these, together with the superfluous huntsmen, are to be distributed among the body which is to advance, and should, for the preservation of better order, be distinguished by some badge.

"Should there be any of the Royal Family present, the head-ranger himself should advance in the centre; otherwise, a trusty huntsman, who should preserve a steady pace in his advance.

"The driving division ought to advance slowly, because too much haste brings the people sooner into disorder. The movement ought to be effected without shouts or cries; only they are to strike the trees with their hunting-poles, and examine carefully if any animal has hidden himself, or lies dead.

"When the people have advanced to the farthest point, the wild animals which have been shot are to be conveyed to the King's skreen.

"No other than good marksmen shall be allowed to carry a gun."

Mr. Greiff has given some farther directions regarding the manner in which the Wolf-skall is to be organized and conducted.

"During my stay at Stockholm, I visited the skall-plats of which I have just been speaking:—this was along with Mr. Arenius, the head-ranger of the district, who was

so obliging as to explain the nature and purport of every thing.

On this occasion, I was in company with Count Charles Frederick Piper, a Swedish nobleman of high rank. The Count held the appointment of *Forste Hofjagmastare*, which may be rendered in French, (for in English I know of no equivalent,) *Grand Veneur de la cour*. As this is the second office in the gift of the Swedish Crown, in regard to the forests, I was of course at head quarters for sporting information. To this accomplished nobleman I am under the greatest obligations, as well for his attentions whilst I remained at Stockholm, as at an after period, when I partook of the hospitalities of his princely residence at Lofstad.

At this time, the ground was covered with snow to the depth of six or eight inches: there were then, as we saw by their tracks, one, if not two Wolves, feeding upon the carrion. As there were more of those animals, however, known to be in the vicinity, which, it was daily expected, might follow the example of their comrades,—and as it was contrary to rule to call out the people, unless a greater number were within the skall-plats, Mr. Arenius did not feel himself justified in taking this step, which he much regretted, as he was very anxious to gratify my curiosity, in witnessing the destruction of some of these pernicious beasts. Though no *chasse* took place whilst I remained in the capitol, in the commencement of the following April, five wolves were one day slaughtered in this very skall-plats.

Very considerable numbers of those animals are sometimes killed in the winter-skalls: I have heard of as many as fifteen being shot in a day. On these occasions, wolves never, I believe, turn upon their assailants; but, when they find escape impossible, they generally skulk, and endeavour to hide themselves. Mr. Greiff says, they do not attempt to leap over the nets, but always endeavour to creep under them.

No one is allowed to use balls at a Wolf-skall, for fear of accidents; these animals are therefore destroyed with large shot.

Anecdotes of Wolves.—As usually happens when the weather is severe, the Wolves now became rather troublesome. Indeed, I heard of their committing many depredations in different parts of the surrounding country: for this reason, I went on one or two little expeditions, under the idea that I might be enabled to destroy some of those voracious animals.

Wolves are very partial to a pig. My plan of proceeding, therefore, was this: I caused one of these animals, of a small size, to be sewed up in a sack, with the exception of his snout; and I then placed him in my sledge. To the back of this vehicle I fastened a rope of about fifty feet in length, to the extreme end of which was attached a small bundle of straw, covered with a black sheepskin; this, when the sledge was in motion, dangled about in such a manner as to be a good representation of the pig. Thus prepared, I drove in the night-time through such districts as were known to be frequented by Wolves. To attract these animals towards us, we kept occasionally pinching the poor pig, which, not liking this treatment, made the forest ring again with his squeaks.

This plan of shooting Wolves with the assistance of a pig is not very unfrequently resorted to in Scandinavia, when the weather is severe. If those dangerous animals happen to hear the cries of the pig, it is said they almost always approach immediately near to the sledge, when it is not, of course, difficult to kill them.

All my expeditions, however, proved unsuccessful; for, owing to the wandering habits of the Wolves, I was never able to fall in with them. On some of these occasions, I have suffered a good deal from cold; as, from the necessity that existed of being ready always for action, it did not answer to be hampered with too much clothing. My poor pig, I remember, had once his ears so hard frozen, that they might have almost been broken off in the same manner as so much glass.

About a week prior to this time, a peasant, on his return home from Amal, one evening tied his horse up to his door, whilst he carried the harness within the house. At this moment, a number of Wolves made their appearance, when the frightened animal broke his bridle, and ran off at the top of his speed. The Wolves, however, gave chase to the horse, and soon succeeded in coming up with him in the forest, when they quickly destroyed him.

During my excursion, I visited the spot where the poor animal met his doom, but, with the exception of a bone or two that were strewed about, not a vestige of the carcass was to be seen; the Wolves having, by this time, devoured the whole of it. There was some blood on the snow, which was trodden down in the vicinity, in the same manner as if it had been gone over by a flock of sheep.

Though I was generally quite alone, with the exception of my driver, during these expeditions, I do not apprehend I ran much personal risk; the greatest danger was from the horse proving unsteady, in the event of the Wolves making their appearance. In that case, the sledge would not improbably have been overturned, when I, in consequence, might have been left to my fate. From the Wolves themselves, under other circumstances, I entertained little apprehension, as I was usually armed with a good cutlass, and more than one gun.

It is said, that people have incurred some jeopardy when

on these expeditions. The following anecdote was related to me by Mr. Garberg, at Gefle. Of the truth of the story, which occurred near to that place, that gentleman did not seem to entertain a doubt.

About twenty years ago, during a very severe winter, and when there were known to be many Wolves roaming about the country, a Captain Nordenalder, together with several companions, started off on an excursion similar to those I have been describing.

The party were provided with a large sledge, such as are used in Sweden to convey coke to the furnaces, a pig, and an ample supply of guns, ammunition, &c. They drove on to a great piece of water which was then frozen over, in the vicinity of Forsbacka, and at no great distance from the town of Gefle. Here they began to pinch the ears, &c. of the pig, which of course squeaked out tremendously.

This, as they anticipated, soon drew a multitude of famished Wolves about their sledge. When these had approached within range, the party opened a fire upon them and destroyed or mutilated several of the number. All the animals that were either killed or wounded were quickly torn to pieces and devoured by their companions. This, as I have observed, is said invariably to be the case, if there be many congregated together.

The blood with which the ravenous beasts had now glutted themselves, instead of satiating their hunger, only served to make them more savage and ferocious than before; for, in spite of the fire kept up by the party, they advanced close to the sledge with the apparent intention of making an instant attack. To preserve their lives, therefore, the Captain and his friends threw the pig on the ice; this, which was quickly devoured by the Wolves, had the effect, for the moment, of diverting their fury to another object.

Whilst this was going forward, the horse, driven to desperation by the near approach of the ferocious animals, struggled and plunged so violently, that he broke the shafts to pieces: being thus disengaged from the vehicle, the poor animal galloped off, and as the story goes succeeded in making good his escape.

When the pig was devoured, which was probably hardly the work of a minute, the Wolves again threatened to attack the party; and as the destruction of a few out of so immense a drove as was then assembled, only served to render the survivors more blood-thirsty, the Captain and his friends now turned their sledge bottom up, and thus took refuge beneath its friendly shelter.

In this situation, it is said, they remained for many hours, the Wolves in that while making repeated attempts to get at them, by tearing the sledge with their teeth. At length, however, assistance arrived, and they were then, to their great joy, relieved from their most perilous situation.

Captain Eurenius, when he was quite a boy, in company with a brother, who was younger than himself, once went on a similar expedition to those of which I have been speaking.

It was in the depth of winter, the cold at the time being very severe, when these striplings proceeded in their sledge to an inlet of the Wenern, which was then sheeted with ice, and which was known to be much frequented by Wolves.

They had a pig along with them, as usual, which, by the application of a corking-pin, they soon caused to open his pipes in such a manner that he might have been heard at two or three miles distance. These cries soon attracted the Wolves to the spot: when they had approached to within a short distance of the sledge, Captain Eurenius discharged his piece, and severely wounded, as he supposed, one of the number.

The report of the gun, however, caused the horse to take fright, when capsizing the sledge, and smashing the shafts to pieces, he went off at a full gallop, with the latter dangling at his heels.

The Captain and his brother were now in a rather awkward predicament: they had, besides, lost their ammunition, and had only one loaded gun left. Leaving the pig in the sledge to its fate, they therefore faced towards their home, from which they were distant several miles, at their best pace. In this while, as it may be supposed, they cast many an anxious look behind, to see if the Wolves were in pursuit.

These fears, however, were at length relieved; for, after proceeding some way, they met their father and a posse of people advancing to their assistance; these had seen the horse come galloping home with the broken shafts; when, knowing the nature of the service on which these two adventurers had been engaged, as well as the direction they had taken, they lost no time in hastening towards the spot. The meeting was a joyful one; the father being not a little delighted thus to find his sons in safety.

The whole party then repaired to the scene of action: here they found the pig had been taken from the sledge and devoured. This also seemed to have been the fate of a wolf,—the same, it was supposed, that Captain E. fired at: for some pieces of skin, and bones, of one of those ferocious animals, were found near the spot.

During severe weather, when Wolves are famishing with hunger, their natural timidity, as I have said, forsakes them, and then they oftentimes conduct their attacks in the most daring manner. Among several instances of the kind which have come to my knowledge, I select the following:

In the depth of a hard winter, many years ago, Captain Eurenius and a friend were one evening traversing the Wenern lake, which was then firmly frozen over; this was at no great distance from the town of Wenersborg, situated, as I have said, at the southern extremity of that noble expanse of water.

They were in a sledge, and jogging quietly along, when, suddenly, their horse pulled up, and became violently alarmed and agitated. For a while they were at a loss to divine the reason why the animal should be so much affrighted, but on looking ahead, they discovered a drove of twelve or fourteen Wolves; these presently approached to within a very short distance of their vehicle, and seemed to threaten them with an immediate attack.

Very unfortunately, they had no gun along with them on this occasion; but both were armed with good swords. Captain E. therefore took the reins, whilst his friend jumping out of the sledge, posted himself sabre in hand, immediately in front of the horse; by these means their ferocious assailants were kept at bay. Finding himself thus protected, the poor animal again moved forward.

The man now kept advancing a pace or two a-head of the horse, brandishing his sword all the while to drive off the Wolves; these were never more than a very short distance from him, and often so near, that he could almost touch them with the point of his weapon.

In this manner, the two travellers proceeded for five or six miles, and until they reached the very outskirts of the town of Wenersborg, when the Wolves thought it prudent to beat a retreat.

Captain E. said, moreover, that the Wolves never attempted to get into the rear of the sledge, but always kept in advance of it. This, if it be practicable, is usually the case with those animals; and is supposed to be owing to their dread of falling into an ambuscade.

Some fifty years ago, when quite a boy, Captain Eurenius was one starlight and very cold night, returning from a dance in the vicinity of Wenersborg. It was Christmas-time, and there were fifteen or sixteen sledges in company: most of the horses were provided with such bells as those of which I have made mention. In the middle of the cavalcade was a sledge occupied by a lady; at the back of the vehicle, as is frequently the case, sat the servant, who was driving; whilst on a bear-skin, which covered her feet, a favourite lap-dog was reposing. In passing through a wood, however, and in spite of the jingling of the bells, &c., a large Wolf suddenly sprang from a thicket, when seizing the poor dog, he leaped over the sledge, and was out of sight, in a thick brake on the opposite side of the wood, in the course of a few seconds.

A somewhat similar anecdote to the above was related to me by Lieutenant Oldenburg.

Two of his friends, whose names I forget, when on a journey in the winter-time, were accompanied by a favourite dog, which was following immediately in the rear of the sledge. All of a sudden, two famished Wolves dashed at the dog, who, to save himself, ran to the side of the vehicle, and jumped over the shafts between the horse and the body of the carriage. The Wolves, nothing deterred, had the audacity to take a similar leap; when, as ill-luck would have it, they got hold of the poor animal.

The dog, however was large and powerful, and his neck, besides, was armed with one of those formidable spiked collars so common to be seen in Sweden. From these causes, he was enabled to escape from the fangs of his assailants, when he at once sprang into the sledge, as if to claim protection from his masters.

Here, however, the Wolves were afraid to pursue him, though, for a considerable distance, they still continued to follow the vehicle. On this occasion, both of Lieutenant O.'s friends were unarmed, and, in consequence, the beasts escaped with impunity.

Another anecdote, of rather a curious nature, was told me by an acquaintance of mine in Wermeland.

A peasant was one day crossing a large lake in his sledge, when he was attacked by a drove of Wolves. This frightened the horse so much, that he went off at full speed. There was at this time a loose rope hanging from the back of the vehicle, that had been used for binding hay, or other purposes: to the end of this a noose happened to be attached. Though this was not intended to catch a Wolf, it fortunately effected that desirable object; for one of the ferocious animals getting his feet entangled within it, he was presently destroyed, owing to the pace at which the horse was proceeding.

The poor peasant, at last, reached a place of safety. Though he had been dreadfully frightened during the chase, he not only found himself much sooner at the end of his journey than he had expected, but richer by the booty he had thus unexpectedly obtained. The skin of a Wolf, in Sweden, is worth, at this time, about fifteen rix-dollars, or as many shillings.

The following circumstance, showing the savage nature of the Wolf, and interesting in more than one point of view, was related to me by a gentleman of rank attached to the embassy at St. Petersburg, it occurred in Russia some few years ago.

A woman, accompanied by three of her children, were one day in a sledge, when they were pursued by a number of Wolves. On this, she put her horse into a gallop, and drove towards her home, from which she was not far distant, with all possible speed. All, however, would not avail, for the ferocious animals gained upon her, and, at last, were on the point of rushing on the sledge. For the pre-

servation of her own life and that of the remaining children, the poor, frantic creature now took one of her babes, and cast it a prey to her blood-thirsty pursuers. This stopped their career for a moment; but, after devouring the little innocent, they renewed the pursuit, and a second time came up with the vehicle. The mother, driven to desperation, resorted to the same horrible expedient, and threw her ferocious assailants another of her offspring. To cut short this melancholy story, her third child was sacrificed in a similar manner.

Soon after this, the wretched being, whose feelings may more easily be conceived than described, reached her home in safety. Here she related what had happened, and endeavoured to palliate her own conduct, by describing the dreadful alternative to which she had been reduced. A peasant, however, who was among the by-standers, and heard the recital, took up an axe, and with one blow cleft her skull in two; saying, at the same time, that a mother who could thus sacrifice her children for the preservation of her own life, was no longer fit to live.

This man was committed to prison, but the Emperor subsequently gave him a pardon.

This gentleman related to me another curious circumstance regarding Wolves: it happened at no great distance from St. Petersburg, only two years previously.

A peasant, when one day in his sledge, was pursued by eleven of these ferocious animals: at this time, he was only about two miles from home, towards which he urged his horse at the very top of his speed. At the entrance to his residence was a gate, which happened to be closed at the time; but the horse dashed this open, and thus himself and his master found refuge within the court-yard.

They were followed, however, by nine out of the eleven Wolves; but, very fortunately, at the instant these had entered the enclosure, the gate swung back on its hinges, and thus they were caught as in a trap. From being the most voracious of animals, the nature of these beasts, now that they found escape impossible, became completely changed: so far, indeed, from offering molestation to any one, they slunk into holes and corners, and allowed themselves to be slaughtered almost without making resistance.

It is said, that the mere act of striking a light with flint and steel, has often the effect of intimidating a Wolf; and that the rattling of a chain not unfrequently answers the like purpose. In the event of a person, when unarmed, being attacked by these blood-thirsty brutes, these things are worth knowing; for, though apparently trifling in themselves, they might be the means of saving his life.

In some parts of Scandinavia, when people are travelling during the winter-time over extended plains, lakes, &c. which are known to be much frequented by Wolves, it is a custom to attach a long rope to the back of the sledge; the serpentine motion that this makes, when the vehicle is proceeding, has, it is said, the effect of deterring these animals from making their attacks.—*Lloyd's Field Sports.*

INFLUENCE OF MUSIC UPON MICE.

The following anecdote of the influence of music upon a Mouse, is related by Dr. Archer, of Norfolk.

"On a rainy evening in the winter of 1815," says this gentleman, "as I was alone in my chamber, I took up my flute and commenced playing. In a few minutes my attention was directed to a mouse that I saw creeping from a hole, and advancing towards the chair I was sitting in; I ceased playing, and it ran precipitately back to its hole: I began again shortly afterwards, and was much surprised to see it re-appear, and take its old position. The appearance of the little animal was truly delightful—it couched itself on the floor, shut its eyes, and appeared to be in ecstacy: I ceased playing, and it instantly disappeared again. This experiment I repeated frequently, with the same success, observing that it was always differently affected, as the music varied from the slow and plaintive to the brisk or lively. It finally went off, and all my art could not entice it to return."

A more remarkable instance of this fact was recently inserted in the *Philadelphia Medical and Physical Journal*, communicated by Dr. Cramer, of Jefferson county. The circumstance, he says, was related to him by a gentleman of undoubted veracity.

"One evening in the month of December, as a few officers on board a British man-of-war in the harbour of Portsmouth, were seated round the fire, one of them began to play a plaintive air on the violin. He had scarcely performed ten minutes, when a mouse, apparently frantic, made its appearance in the centre of the floor, near the large table which usually stands in the ward room. The strange gestures of the little animal strongly excited the attention of the officers, who, with one consent, resolved to suffer it to continue its singular actions unmolested. Its exertions now appeared to be greater every moment—it shook its head, leaped about the table, and exhibited signs of the most ecstatic delight. It was observed, that in proportion to the gradation of the tones to the soft point, the feelings of the animal appeared to be increased, and *vice versa*. After performing actions, which an animal so diminutive would at first sight seem incapable of, the little creature, to the astonishment of the delighted spectators, suddenly ceased to move, fell down, and expired, without evincing any symptoms of pain."—*Sport. Mag.*

QUAILS OR PARTRIDGES.

QUAIL, OR PARTRIDGE.

PERDIX VIRGINIANUS.

[Plate IV.—Male and Female.]

Arct. Zool. 318, *No.* 185.—Catesb. *App. p.* 12.—*Virginian Quail*, Turt. *Syst. p.* 460.—*Maryland Q. Ibid.*—*Le Perdrix d'Amerique*, Briss. i. 231.—Buff. ii. 447.—*Tetrao Virginianus*, Linn. *Syst. ed.* 10, *p.* 161. *T. Marilandicus, id. ib.*—*Perdix Virginiana*, Lath, *Ind. Orn. p.* 650. *P. Marilanda, id. p.* 651.—*Caille de la Louisiane*, Buff. *Pl. Enl.* 149.—J. Doughty's *Collection.*

This well-known bird is a general inhabitant of North America, from the Northern parts of Canada and Nova Scotia, in which latter place it is said to be migratory, to the extremity of the Peninsula of Florida; and was seen in the neighbourhood of the Great Osage village, in the interior of Louisiana. They are numerous in Kentucky and Ohio; Mr. Pennant remarks, that they have been lately introduced into the island of Jamaica, where they appear to thrive greatly, breeding in that warm climate twice in the year. Captain Henderson mentions them as being plenty near the Balize, at the Bay of Honduras. They rarely frequent the forest, and are most numerous in the vicinity of well cultivated plantations, where grain is in plenty. They, however, occasionally seek shelter in the woods, perching on the branches, or secreting among the brush wood; but are found most usually in open fields, or along fences sheltered by thickets of briers. Where they are not too much persecuted by the sportsmen, they become almost half domesticated; approach the barn, particularly in winter, and sometimes in that severe season mix with the poultry, to glean up a subsistence. They remain with us the whole year, and often suffer extremely by long hard winters, and deep snows. Indeed, it often happens that whole coveys are found frozen to death, or so extremely reduced, as not possessing sufficient power to fly. An instance of this kind occurred in the centre of the city of Philadelphia. In the very severe winter of 1828, a quantity of rubbish was removed from the large lot of ground at the corner of Eleventh and Market streets, owned by S. Girard, Esq. under which a covey of Partridges was discovered in so weak and famished a state, as to be taken by the hand. These birds, it is supposed, were hatched in this lot the preceding summer, as persons residing in that vicinity heard them frequently whistling through the season. During these protracted snows, the arts of man combine with the inclemency of the season for their destruction, and to the ravages of the gun are added others of a more insidious kind. Traps are placed on almost every plantation, in such places as they are known to frequent. These are formed of lath, or thinly split sticks, somewhat in the shape of an obtuse cone, laced together with cord, having a small hole at top, with a sliding lid, to take out the game by. This is supported by the common *figure* 4 trigger, and grain is scattered below, and leading to the place. By this contrivance ten or fifteen have sometimes been taken at a time. But, a more barbarous, and as equally successful a mode is employed by many to entrap them, by fixing snoods made of horse-hair across the paths and furrows of such fields and thickets, as are frequented by these birds, especially their roosting grounds. This is done by driving into the ground small stakes, about ten inches in length, and two inches apart, to the distance of five or six feet, similar to a fence, leaving the spaces where the snoods are suspended, much wider, and to the number, perhaps, of four or five. The Partridges, in running the path, finds this impediment, and attempt to pass through the wider spaces, and are caught by the neck, where they often remain in this cruel and most tormenting situation for days. These are sometimes brought alive to market, and occasionally bought up by sportsmen, who, if the season be very severe, sometimes preserve and feed them till spring, when they are humanely turned out to their native fields again, to be put to death, at some future time, *secundem artem.* Between the months of August and March, great numbers of these birds are brought to the market of Philadelphia, where they are sold from eight to eighteen cents a piece.

The Quail begins to build early in May. The nest is made on the ground, usually at the bottom of a thick tuft of grass that shelters and conceals it. The materials are leaves and fine dry grass, in considerable quantity. It is well covered above, and an opening left on one side for entrance. The female lays from fifteen to twenty-four eggs, of a pure white without any spots; and during the period of incubation are remarkably tenacious of their nest, for rather than forsake it, they will frequently sacrifice their lives, and it is by no means an uncommon occurrence for them to fall victims to the scythe. The time of incubation has been stated to me by various persons at four weeks, when the eggs were placed under the domestic hen. The young leave the nest as soon as they are freed from the shell, and are conducted about in search of food by the female; are guided by her voice, which at that time resembles the twittering of young chickens, and sheltered by her wings, in the same manner as those of the domestic fowl; but with all that secrecy and precaution for their safety, which their helplessness and greater danger require. In this situation, should the little timid family be unexpectedly surprised, the utmost alarm and consternation instantly prevail. Sometimes, when an enemy approaches, (espe-

cially the sportsman's dog,) the mother will instantly squat herself, and collect her little brood under her wings for protection, and at this time she will remain so perfectly tranquil as to permit the hand almost to grasp her, before she will attempt to escape; she will then throw herself in the path, fluttering along, and beating the ground with her wings, as if sorely wounded, using every artifice she is master of, to entice the passenger in pursuit of herself, uttering, at the same time, certain peculiar notes of alarm, well understood by the young, who dive separately amongst the grass, and secrete themselves till the danger is over; and the parent, having decoyed the pursuer to a safe distance, returns, by a circuitous route, to collect and lead them off. This well-known manœuvre, which nine times in ten is successful, is honourable to the feelings and judgment of the bird, but a severe satire on man. The affectionate mother, as if sensible of the avaricious cruelty of his nature, tempts him with a larger prize, to save her more helpless offspring; and pays him, as avarice and cruelty ought always to be paid, with mortification and disappointment.

The eggs of the Quail have been frequently placed under the domestic hen, and hatched and reared with equal success as her own; though, generally speaking, the young Partridges being more restless and vagrant, often lose themselves, and disappear. The hen ought to be a particularly good nurse, not at all disposed to ramble, in which case they are very easily raised. Those that survive, acquire all the familiarity of common chickens; and there is little doubt, that if proper measures were taken, and persevered in for a few years, that they might be completely domesticated. They have been often kept during the first season, and through the whole of the winter, but have uniformly deserted in the spring. Two young Partridges that were brought up by a hen, when abandoned by her, associated with the cows, which they regularly followed to the fields, returned with them when they came home in the evening, stood by them while they were milked, and again accompanied them to the pasture. These remained during the winter, lodging in the stable, but as soon as spring came, they disappeared. Of this fact I was informed by a very respectable lady, by whom they were particularly observed.

It has been frequently asserted to me, that the Quails lay occasionally in each other's nests. Though I have never myself seen a case of this kind, I do not think it altogether improbable, from the fact, that they have often been known to drop their eggs in the nest of the common hen, when that happened to be in the fields, or at a small distance from the house. The two Partridges above mentioned were raised in this manner; and it was particularly remarked by the lady, who gave me the information, that the hen sat for several days after her own eggs were hatched, until the young Quails made their appearance.

The Partridge, on her part, has sometimes been employed to hatch the eggs of the common domestic hen. A friend of mine, who himself made the experiment, informs me, that of several hen's eggs which he substituted in place of those of the Partridge, she brought out the whole; and that for several weeks he occasionally surprised her in various parts of the plantation, with her brood of *chickens;* on which occasions she exhibited all that distressful alarm, and practised her usual manœuvres for their preservation. Even after they were considerably grown, and larger than the Partridge herself, she continued to lead them about; but, though their notes, or call, were those of common chickens, their manners had all the shyness, timidity, and alarm of young Partridges; running with great rapidity, and squatting in the grass, exactly in the manner of the Partridge. Soon after this they disappeared, having probably been destroyed by dogs, by the gun, or by birds of prey. Whether the domestic fowl might not by this method be very soon brought back to its original savage state, and thereby supply another additional subject for the amusement of the sportsman, will scarcely admit of a doubt. But the experiment, in order to secure its success, would require to be made in a quarter of the country less exposed than ours to the ravages of guns, traps, dogs, and the deep snows of winter, that the new tribe might have full time to become completely naturalized, and well fixed in all their native habits.

About the beginning of September, the Quails being now nearly full grown, and associated in flocks, or coveys, of from four or five to thirty, afford considerable sport to the gunner. And, perhaps, of all the feathered tribe which inhabit this country, none are persecuted with so much untiring vigour, as this interesting little bird; the delicacy of its flesh, its domestic qualities, and source of profit, seem to mark it for that destruction which continually awaits it.

Ranking high in our scale of game, and being universally found in this country, the Partridge, by its familiar habits, invites the sportsman, who pursues it as a source of pleasurable recreation, superior to all others; and thus, between man, hawks, and vermin, is a continual war waged against this harmless bird, and every succeeding year adds to the number and avidity of its enemies, but so great is the fecundity of the Partridge, that instead of decreasing in quantity, they appear to thrive, and multiply, in despite of the system of extermination carried on against them. The most are killed by man, and he may be fairly considered their greatest enemy; but the Par-

tridge is more fearful of the hawk, for when pursued by this destructive bird, terror overcomes its instinct, and it will oftimes fly, unmindful of the consequences, against a tree or house with so much force, as to be killed; in fact, frequently their whole muscular powers become so paralyzed by dread, that it will suffer itself to be trodden upon, or taken, without making an effort to escape.

At this time, the notes of the male are most frequent, clear, and loud. His common or early call, consists of two notes, with sometimes an introductory one, and is similar to the sound produced by pronouncing the words, "Bob White." This call may be easily imitated by whistling, so as to deceive the bird itself, and bring it near. While uttering this, he is usually perched on a rail of the fence, or on a low limb of an apple-tree, where he will sometimes sit, repeating at short intervals "Bob White," for half an hour at a time. It, however, is only practised after pairing in the spring, and continues through the summer until about the middle of August, when it is substituted by another call, which is used by them until the time of pairing comes on again. When a covey are assembled in a thicket or corner of a field, and about to take wing, they make a low twittering sound, not unlike that of young chickens, and when the covey is dispersed, they are called together again by a loud and frequently repeated note, peculiarly expressive of tenderness and anxiety.

About the first of October they prepare for winter quarters, and at this time commences what is called their *running season*, a singular habit of this bird, and may be accounted for, in some measure, as follows: In open and well-cultivated grounds, their food and cover are destroyed by the husbandman, who turns the soil in order to put in his winter's grain; added to this, are the few watering places and swamps to afford them the means of life and protection, consequently, the birds, impelled by instinct, seek those places in low and swampy countries, where they can always procure water, and shelter from their enemies and the severity of winter. Thus, in the neighbourhood of Philadelphia, and all populous cities, where the country is in a high state of cultivation, does this circumstance of the Partridge occur; but in New Jersey, Delaware, and the interior of other States, it seldom or never takes place.

The food of the Partridge consists of grain, seeds, insects, and berries of various kinds. Buckwheat and Indian corn are particular favourites. In September and October the buckwheat fields afford them an abundant supply, as well as a secure shelter. They usually roost at night in the middle of a field, on high ground; and from the circumstance of their dung being often found in such places, in one round heap, it is generally conjectured that they roost in a circle, with their heads outwards, each individual in this position, forming a kind of guard to prevent surprise. They also continue to lodge for several nights in the same spot.

The majority of Partridges in a covey, are males; hence, in the pairing season, it frequently happens that two cocks claim the same hen, and decide their right by combat, upon the truest principles of honour. A gentleman who was an eye witness to a battle between two male Partridges, during the past spring, stated that it lasted for a considerable time. His attention was attracted by a rustling noise in the bushes, accompanied with a twittering sound, and examining into the cause, he perceived these birds in close combat: after some time, one bird ran off to a considerable distance, and was followed closely by his antagonist, when they wheeled about and returned to the same spot, where they renewed the fight with increasing vigour; then, in turn, the other bird acted in a similar manner, by running away, being chased by his antagonist, and in this way the battle was protracted for half an hour, and until the contending parties became so exhausted, that our friend put an end to the contest, by making them prisoners.

The Partridge, like all the rest of the gallinaceous order, flies with a loud whirring sound, occasioned by the shortness, concavity, and rapid motion of its wings, and the comparative weight of its body. The steadiness of its horizontal flight, however, renders it no difficult mark for the sportsman, particularly when assisted by his sagacious pointer. The flesh of this bird is peculiarly white, tender, and delicate, unequalled, in these qualities, by that of any other of its genus in the United States.

The Quail, as it is called in New England, or the *Partridge*, as in Pennsylvania, is nine inches long, and fourteen inches in extent; and will usually weigh from seven to eight, and sometimes nine ounces, each; the bill is black; line over the eye, down the neck, and whole chin, pure white, bounded by a band of black, which descends and spreads broadly over the throat; the eye is dark hazel; crown, neck, and upper part of the breast, red brown; sides of the neck spotted with white and black, on a reddish brown ground; back, scapulars, and lesser coverts, red brown, intermixed with ash, and sprinkled with black; tertials edged with yellowish white; wings plain and dusky; lower part of the breast and belly pale yellowish white, beautifully marked with numerous curving spots, or arrow heads of black; tail ash, sprinkled with reddish brown; legs, very pale ash.

The female differs in having the chin and sides of the head yellowish brown, in which dress it has been described as a different kind. There is, however, only one species of Quail at present known within the United States.

A HUNTING EXCURSION.

In the winter of 1817, (being a resident of Pike county, in the northern part of Pennsylvania,) I shouldered my rifle, and made a solitary hunting excursion after deer, along the big Buskill, a creek or tributary stream to the river Delaware, about one hundred miles north of Philadelphia, and remarkable for the rocky, barren country, through which it finds its way.

At this period, the population was thin and scattered, the nearest settlement, or town, being fifteen miles distant, save the habitation from which I made my egress, and a few other log dwellings in the neighbourhood. The rugged and barren soil offered no inducements to the toilsome hand of the pioneer, or agriculturalist. Wild animals were numerous; deer, bears, panthers, and wolves, seemed to be the sole inhabitants of this dreary solitude, while the horrid yell, and devastating howl of the two latter, only broke in upon the dull silence which reigned in this romantic wild.

The day on which I made the forementioned excursion, was cold, dreary, and threatening rain. I had travelled, perhaps, three miles before I succeeded in killing a deer, although I saw several, but out of range of my trusty rifle; this was a fine buck, and after divesting him of his offals, I as usual, hung him on a snag projecting from the side of a barren oak, until I could procure assistance to carry him home. Being somewhat fatigued, I sat me down to rest on a high, commanding spot, which was a craggy projecture, terminating with a considerable precipice. I remained in a contemplative mood, perhaps for fifteen minutes, when my attention was aroused by a crackling noise on the opposite side of the creek. I discovered it to proceed from a panther, of enormous size, that was approaching the place where I was seated. I, however, soon lost sight of it, as it appeared to go towards the foot of the precipice, immediately under my feet, and, as I supposed, with the intention of rising the hill. I seized my rifle, and sheltered myself behind a large tree, and with breathless anxiety awaited the moment, when my antagonist would show his head at the top of the precipice; and, being thus prepared to let fly the messenger of death, I felt but little alarm, from the assurance of my ability to despatch the monster, so soon as the opportunity offered.

But, I had mistaken the course and object of the animal, and the precautionary steps I had taken, proved in the sequel, to have been my guarantee of safety, for I had scarcely adjusted every thing necessary in these cases, when I heard a yell, the most ferocious and terrific that the mind can conceive, and in a moment, the panther made a spring from the bottom of the precipice into a tree, twenty feet from the ground, foaming, yelling, and tearing the bark and branches with her claws, and distant from me about eighteen or twenty yards. The paroxysms of rage exhibited at this time by the creature, exceeded any thing I had ever before witnessed. I was then unable to account for it, there being no apparent cause to excite such actions, and the courage which I had acquired by long experience, was almost failing me; but, being convinced that my only safety was in the destruction of this terrible creature, I levelled my piece, and fired, but at the instant the trigger obeyed its impulse, the animal moved, and instead of killing, I only added fury to my antagonist. She then sprung from the tree to a large limb of an adjoining black oak, commenced lashing the smaller limbs with her claws, curling her tail, and darting fury from her eyes, sought the object of her anger, on whom she might wreak her vengeance.

I found that my security consisted in keeping perfectly quiet, and with much haste and trepidation, I succeeded in

reloading my rifle; this quieted my fears, and I gained my usual confidence. By this time the panther, writhing under the effect of the wound, yelled more terrible, if possible, than before, and seemed actuated solely by the spirit of the infernal regions, commenced springing on the rocks, then on some tree, but fortunately, always in such situation as to keep the tree, behind which I stood, between us; the last leap, however, that she made, was in the fork of a tree, about fifteen yards from me, which completely uncovered me to the full view of this enraged monster.

Whether the animal, at the discovery, became daunted, or enjoying the self-satisfaction of having her enemy within her reach, and thereby paused in order to glut her eyes more fully, preparatory to the destruction of her prey, or before she made her final leap, is impossible for me to divine; but, providentially for me, it was thus, for this awful moment of silence and hesitancy, enabled me to shoot the creature through the heart, and bring her lifeless at my feet. Unaccustomed to see this animal do thus, I was endeavouring to account for actions so extraordinary, in a variety of causes; but, on wending my way to my habitation, the mystery was solved. I overtook a hunter, who had in his arms two young panthers, and it appeared that this adventurous man had gone into the den of the mother, and robbed her of her kittens; this being the case, it is easy to account for the ferocity of the animal I had just killed, and from whose vengeance I thanked my stars I had so luckily escaped. But my feelings towards the stranger were not of the most pacific kind, arising from the reflection of my danger having been caused by his fool-hardiness, and I expressed myself to him on the subject in strong terms to that effect.

The man, after hearing the story, turned pale and shuddered, not at any danger he was then in, but from that which he had so fortunately escaped; for had the infuriated mother returned at the period he was in the den, the cubs he held in his arms, would, by the time I was conversing with him, have been sucking his blood, for, from his own tale, he could not have left the spot more than half an hour previous to my arrival. M.

CHESAPEAKE DUCK SHOOTING.

The Chesapeake Bay and its tributary streams, have, from their discovery, been known as the greatest resort of water fowl in the United States. This has depended on the profusion of their food, which is accessible on the immense flats, or shoals, that are found near the mouth of the Susquehanna, the whole length of North-East and Elk rivers, and on the shores of the bay and connecting streams, as far south as York and James rivers.

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The quantity of fowl of late years, has been decidedly less than in times gone by; and the writer has met with persons who have assured him, the number has decreased one half in the last fifteen years. This change has arisen, most probably, from the vast increase in the destruction from the greater number of persons who now make a business or pleasure of this sport; as well as the constant disturbance they meet with on many of their feeding grounds, which induces them to distribute themselves more widely, and forsake their usual haunts.

As early as the first and second week in October, the smaller Ducks, as the Buffel-head, (Anas *albeola*,) South southerly, (A. *glacialis*,) and the Ruddy, or Heavy-tailed Duck, (A. *rubidus*,) &c., begin to show themselves in the upper part of the bay, and by the last of the month, the Black-head, (A. *marila*,) Widgeon, or Bald-pate, (A. *Americana*,) Red-head, (A. *ferina*,) and the Goose, (A. *Canadensis*,) appear, and rapidly distribute themselves down the bay. The Canvass-back, (A. *valisineria*,) and the Swan, (A. *cygnus*,) rarely, unless the weather to the north has been severe, appear in quantities till the middle of November. All these fowl, when first arrived, are thin and tasteless, from their privation during their migration, and perhaps preparatory arrangements, and require some days at least, of undisturbed repose, to give them that peculiar flavour, for which some of them are so celebrated. During the low tides succeeding their arrival, the birds sit on the flats far from the shores, and rarely rise to the wing unless disturbed; but when the spring tides render the water too deep for feeding, they commence their career, and pass down the bay in the morning, and return in the evening. Most of these fowl feed on the same grass, which grows abundantly on the shallows in the bay and adjacent waters, and has been called Duck-grass, (Valisneria *Americana*.)

It grows from six to eighteen inches in length, and is readily pulled up by the root. Persons who have closely observed these Ducks while feeding, say, that the Canvass-back, and Black-head, dive and pull the grass from the ground, and feed on the roots, and the Red-head and Bald-pate, then consume the leaves. Indeed, although the Bald-pate is a much smaller bird than the Canvass-back, they have been seen to rob the latter, immediately on their return from under the water, of all their spoil.

All these larger Ducks are found together when feeding, but separate when on the wing. That they feed on the same grass, is evident, from the similarity of flavour, and those *most* accustomed to the article, have a difficulty in deciding on the kind of Duck from the taste. Indeed, the *Bald-pate* is generally preferred by residents. Whilst speaking of flavour, I will remark, that the Swan, under

five years of age, is probably the most luscious of all water fowl. It possesses the taste of the Goose, but more concentrated, and is far more tender; and I have known persons nauseated by the extreme sweetness of the flesh. The length of time this bird can be preserved untainted is remarkable, having seen one of them still perfectly sweet four weeks after his death, and without any means having been employed, other than an exposure to the air during the time, most of which had been wet and warm. The age of the swan may be known by the colour of the feathers, &c., the yearling being of a deep leaden tint, with a delicate red bill; the second year, he is of a lighter colour, with a white bill; the third season, his bill has become a jet black, but about one third of the plumage is still tipped with grey, and till he is five years of age, an occasional feather will present the tint of youth. As they live, perhaps, to one hundred years or more, they become exceedingly tough and tasteless, and flying, as they generally do, in lines of from three to eight, with a patriarch at the head, the leading Swan is usually passed and the followers chosen. These *elders* have a note remarkably resembling, at a distance, the common tin trumpet, and the intensity of their inharmonious scream is decreased by youth.

"The last sweet notes of the expiring Swan,"

are as unknown in the Chesapeake, as

"Memnon's music which at sun-rise play'd."

When more than one person is shooting, it is usual for each to name which Swan he will aim at, and if there be not enough for all, two will take a particularly good bird, and if it be killed, will decide its possession afterwards, by some *play* of chance. Few are willing to take the first bird, even though their position of *last* in the direction of flight, would compel them, according to usage, to do so, not only from the difficulty and uselessness of killing the old ones, but there is much less chance of a stray shot from a neighbour's gun assisting in the destruction.

In the autumn of 1829, the writer with another person, was on Abby Island, when seven Swans were approaching the point in one line, and three others a short distance behind them. The small group appeared exceedingly anxious to pass the larger, and as they doubled the point at about sixty yards' distance, the three formed with the second bird of the larger flock, a square of probably less than three feet. At this moment, both guns were discharged, and three Swans were killed, and the fourth so much injured, that he left the flock and reached the water a short distance in the bay, but it being nearly dark, his direction was lost. These, with another that had been killed within an hour, and three which were subsequently obtained, were all of less than five years of age, and averaged a weight of eighteen pounds.

The Swans *never* leave the open shores of the bay for the side streams, and the Geese rarely through the day, though they often retire to the little inlets to roost or feed at night. Few of these large game are found after their regular settlement, above Spesutie Island, but lay on the flats in mingled masses of from fifty to five hundred, down the western shores, even as far as the Potomac. During a still night, a few Swans may often be seen asleep in the middle of the bay, surrounded by a group of far more watchful Geese; and the writer was paddled at day-break, one morning, within ten feet of an enormous sleeping Swan, who had probably depended for alarm on the wary Geese, by which he had been surrounded, but which, as we approached had swam away. By an unforeseen occurrence, when a few seconds would have enabled us to have stunned him by a blow, he became alarmed, and started in a direction that prevented a probable chance of killing, from our position, and tottering nature of the skiff.

The strength of these birds is so great, that if we had attempted his capture without first disabling him, he would doubtless have upset the boat; for it has been known that a full-grown Swan, and adults usually measure seven feet from tip to tip, is more than equal in strength, in three feet water, to a good-sized man.

By the middle of December, particularly if the weather has been a little severe, the fowl of every kind has become so fat, that I have seen Canvass-back burst open in the breast in falling on the water; and spending less time in feeding, pass up and down the bay, from river to river, in their morning and evening flights, and give at certain localities, great opportunities for destruction. They pursue, even in their short passages, very much the order of their migratory movements, of the line or baseless triangle, and when the wind blows on the *points* which may lie in their course, the sportsman has great chances of success. These *points* or courses of the Ducks, are materially affected by the winds, for they avoid, if possible, an approach to the shore, but when a strong breeze sets them on these projections of the land, they are compelled to pass within shot, and often over the land itself.

In the Susquehanna and Elk rivers, there are few of these points for shooting, and success depends, in those places, in destroying them on their feeding grounds. After leaving the eastern point, at the mouth of the Susquehanna, and Turkey Point, on the western side of the Elk river, which are both moderately good for flying shooting, the first place of much celebrity is the *Narrows*, between Spesutie Island and the western shore. These *Narrows* are about three miles in length, and from three to

five hundred yards in breadth. By the middle of November, the Canvass-backs particularly, begin to feed in this passage, and the entrance and out-let, as well as many intermediate spots, become very successful stations. A few miles further down the western shore, is Taylor's Island, which is situated at the mouth of the Rumney, and Abby Island, at the mouth of Bush river, which are both celebrated for Ducks, as well as Swans and Geese. These are the most northerly points where large fowl are met with, and projecting out between deep coves, where immense numbers of these birds feed, they possess great advantages. The south point of Bush river, or Legoe's point, and Robbins' and Rickett's points, near Gunpowder river, are fruitful localities. Immediately at the mouth of this river, is situated Carroll's Island, which has long been known as a great shooting ground, and is in the rentage of a company, at a high rate. Maxwell's point, as well as some others up this and other rivers, and even further down the bay, are good places, but less celebrated than those I have mentioned. Most of these points are let out, as shooting grounds, to companies and individuals, and they are esteemed so valuable, that intruders are treated severely.

It has been ascertained, that disturbing the fowl on the feeding flats, is followed, in most cases, by their forsaking those haunts, and seeking others; hence, in the rivers leading to the bay, near flying points, they are never annoyed by boat shooting, either by night or day, and although the discharge of guns from the shore may arouse them for a time, they soon return; whereas, a boat or sail in chase a few times, will make them forsake a favourite spot for days.

From the great number of Ducks that are seen in all directions, one would suppose that there could be no doubt of success, at any of the points in their course of flight; but whilst they have such correct vision as to distance, and wide range of space, unless attending circumstances are favourable, a sportsman may be days without a promising shot: for the western side of the bay, and it is there the best grounds are found, the southerly winds are the most favourable; and, if a high tide is attended by a smart frost and mild south wind, or even calm morning, the number of birds set in motion becomes inconceivable, and they approach the points so closely, that even a moderately good shot, can procure from fifty to one hundred Ducks a day. This has often occurred, and the author himself has seen eight fat Canvass-backs killed at one discharge into a flock, from a small gun.

To a stranger, visiting these waters, the innumerable Ducks, feeding in beds of thousands, or filling the air with their careering, with the great numbers of beautiful white Swans resting near the shores, like banks of driven snow, he would naturally suppose the facilities for their destruction were equal to their profusion, and with so large an object in view, a sportsman could scarcely miss his aim. But when he considers the great thickness of their covering, the velocity of their flight, the rapidity and duration of their diving, and the great influence that circumstances of wind and weather have on the chances of success, it becomes a matter of wonder how so many are destroyed.

The usual mode of taking these birds has been, till recently, by shooting from the points during the flight, or from the land or boats, on their feeding grounds, or by *toling*, as it is strangely termed, an operation by which the Ducks are sometimes induced to approach within a few feet of the shore, from a distance often of several hundred yards. This process, though it has been frequently described, may not be uninteresting to repeat. A spot is usually selected where the birds have not been much disturbed, and where they feed at three or four hundred yards from, and can approach to within forty or fifty yards of, the shore, as they will never come nearer than they can swim freely. The higher the tides and calmer the day, the better, for they feed closer to the shores and see more distinctly. Most persons on these waters, have a race of small, white or liver-coloured dogs, which are familiarly called the *toler* breed, but which appear to be the ordinary Poodle.

These dogs are extremely playful, and are taught to run up and down the shore, in sight of the Ducks, either by the motion of the hand, or by throwing chips from side to side. They soon become perfectly acquainted with their business, and as they discover the Ducks approaching them, make their jumps less high, till they almost crawl on the ground, to prevent the birds discovering what the object of their curiosity may be. This disposition to examine rarities, has been taken advantage of, by using a red or black handkerchief, by day, and white, by night, in toling, or even by gently splashing the water on the shore. The nearest Ducks soon notice the strange appearance, whatever the plan attempted, raise their heads, gaze intently for a moment, then push for the shore. The rest follow suit, and the author has, on many occasions, seen thousands of them swimming in a solid mass, direct to the object; and by removing the dog further into the grass, they have been brought within fifteen feet of the bank. When they have approached to about thirty or forty yards, their curiosity is generally satisfied, when they swim laterally up and down for a few seconds, and then retrograde to their old spot. Whilst presenting the side view, is the moment to shoot, and forty or fifty Ducks have often been killed by a small gun. The *Black-heads* toll the most readily, then the *Red-heads*, next the *Canvass-backs*, and the *Bald-pates* rarely; and this is the ratio of their

approach to the points in flying, although if the Canvass-back has determined on his direction, few circumstances will change his course. The total absence of cover or precaution against exposure to sight, or even a large fire, will not turn these birds aside on such occasions.

In *flying* shooting, the *Bald-pate* is a great nuisance, for they are so shy, that they not only avoid the points themselves, but by their whistling and confusion of flight at such times, alarm others; and few days occur during the season, without many maledictions on their very existence.

As simple as it may appear to shoot, with success, into a solid mass of Ducks, sitting on the water at forty or fifty yards' distance; yet, when you recollect, that you are placed nearly level with the water, the object opposed to the visual line, even though composed of hundreds, may be in appearance but a foot or two in width. To give, therefore, the best promise of success, old duckers recommend that the *nearest* Duck should be in perfect relief above the sight, whatever the size of the column, to avoid the common result of over-shooting. The correctness of this principle was illustrated to the writer, in an instance in which he had *toled* to within a space between forty and seventy yards of the shore, a bed of certainly hundreds of Ducks. Twenty yards beyond the outside birds of the solid mass, were five Black-heads, one of which was alone killed out of the *whole* number, by a deliberate aim into the *middle* of the large flock from a rest, by a heavy, well-proved duck gun.

Before I leave the subject of *sitting* shooting, I will mention an occurrence that took place on Bush river, a few years since. A man whose house was situated near the bank, on rising early one morning, observed the river had frozen, except an open space of ten or twelve feet in diameter, at about eighty yards from the shore, nearly opposite his house. The spot was full of Ducks, and with a heavy gun he fired into it; many were killed, and those that flew soon returned, and were again and again shot at, till fearful he was injuring those already his own, he ceased the massacre, and brought on shore ninety-two Ducks, most of which were Canvass-backs.

The writer, three years since, had the use of a dog of the above species, who had never, from his extreme youth, been taught, and the fourth or fifth attempt that was made at *toling*, as the Ducks neared him, he retired into the grass, stooped, and when he supposed they were within shot, immediately ceased his play, and at the sound of the click in cocking, laid flat down that he might be out of danger. This manœuvre was observed frequently afterwards, and when *he* supposed the Ducks sufficiently near, no inducements could make him play.

To prevent them running in, whilst *toling*, these dogs are not allowed to go into the water to bring out the Ducks, but another breed of large dogs of the Newfoundland and water spaniel mixture are employed. These animals, whilst toling is in progression, or at a point, take apparently as much interest in success, as the sportsman himself. During a flight, their eyes are incessantly occupied in watching the direction from whence the birds come, and I have frequently seen them indicate, by their manner, the approach of a flock so distant, that the human eye would have overlooked it. As the Ducks come, the dogs lay down, but still closely observing them, and the moment the discharge occurs, jumps up to see the effect. If a Duck falls dead, they plunge in to bring it; but many of them wait to see *how* it falls, and whether it swims, and they seem to be as aware as the gunner, of the improbability of capture, and will not make the attempt, knowing, from experience, that a bird merely *winged* will generally save itself by swimming and diving. These dogs usually bring one Duck at a time out of the water; but a real Newfoundland, which was with the author and his company, this autumn, was seen, on several occasions, to swim twenty yards further, and take a second in his mouth to carry on shore. The indefatigability and ambition of these animals is remarkable, and a gentleman informed the author, that he had known his dog to bring, in the space of one hour, twenty Canvass-backs and three Swans from the water, when the weather was so severe that the animal was covered with icicles, and to prevent him from freezing, he took his own great coat to envelop the dog, during the time. Some dogs will dive a considerable distance after a Duck, but a crippled Canvass-back, or Black-head, will swim so far under the water, that they can rarely be caught by the dog; and it often has been observed, that the moment one of these Ducks, if merely winged, reaches the surface, he passes under, and, however calm, cannot be seen again. To give an idea of the extreme rapidity with which a Duck can dive, I will relate an occurrence which was noticed by myself, and a similar one took place to another of the party, the same day. A male south southerly was shot at in the water, by a percussion gun, and after escaping the shot by diving, commenced his flight, and when about forty yards from the boat, he had acquired an elevation of a foot, or more from the surface. A second percussion gun was discharged, and he dived from the wing at the flash, and though the spot of entrance was covered by the shot, he soon arose unharmed and flew.

Canvass-backs, when wounded, on the streams near the bay, instantly direct their course for it, where they nestle among the grass, on the shores, till cured, or destroyed by eagles, hawks, gulls, foxes, or other vermin, that are constantly on the search; and if a dead Canvass-back be not soon secured, he becomes a prey to the gulls, who rarely

touch any other kind, so refined is their taste. I have seen severe contests take place between crippled Canvass-backs and gulls, and although a pounce or two generally prevents further resistance, sometimes they are driven off. If the bird is remarkably savoury, the gull makes such a noise, that others are soon collected, when possession is determined by courage or strength.

Another mode of taking Ducks, consists in placing gilling nets under water, on the feeding grounds, and when they dive for food, their head and wings become entangled in the meshes, and they are drowned. This plan, though successful at first, soon drives the birds from these places; and, in some cases, a few applications have entirely prevented their return for some weeks. Paddling upon them in the night, or day, produces the same effect; and although practised to some extent on Bush river, is highly disapproved of by persons shooting from points. For the last three years, a man has been occupied on this stream, with a gun of great size fixed on a swivel in a boat, and the destruction of game, on their feeding flats, has been immense; but so unpopular is the plan, that many schemes have been privately proposed of destroying his boat and gun, and he has been fired at with ball so often, that his expeditions are, at present, confined to the night. Sailing with a stiff breeze upon the Geese and Swans, or throwing rifle-balls from the shore into their beds, is sometimes successful.

Moonlight Goose-shooting has not been a general practice, but as these birds are in motion during light nights, they could readily be brought within range, by "*honking*" them when flying. This sound is very perfectly imitated at Egg Harbour; and I have seen Geese drawn at a right angle from their course by this note. They can, indeed, be made to hover over the spot, and if a captive bird was employed, the success would become certain.

Stool Ducks are little known, and from the very partial success in their employment the last fall, by the writer and his company, their usefulness seems very problematical.

The art of shooting a Duck, is one difficult to acquire, the exceeding rapidity of their flight, rendering it necessary to direct the gun in advance, in proportion to their distance.

It has been pretty well ascertained, that, with a moderate wind, most of these birds can fly at the rate of a mile in a minute, or eighty-eight feet in a second; and as no doubt an appreciable interval must elapse from the passage of the load from the barrel, till it reaches the object, in a distance of one hundred yards, an idea can be formed of the necessity of an allowance for flight. This interval is so distinct, that, on most occasions, the shot can be heard to strike, even at moderate distances, and when the result is fatal. Under ordinary circumstances, at forty yards, the head is generally aimed at; and at sixty, from six inches to a foot is given; but, with a stiff breeze to help them, even three or four feet becomes necessary. With Swan, at sixty yards, the head is still aimed, but the neck prolongs that part to two feet in advance of the body. None of these birds should be shot at, when advancing, for the thickness of the covering of the breast, as well as its rotundity, diminish the chance of success; but experienced Duck-shooters allow the bird to pass by them entirely, and then the shot strikes on a flatter surface, as under the wing, and also passes *in* with the direction of the feathers. The same latitude of advance need not be allowed with the percussion gun, as with the flint, from the more instantaneous discharge, and *this* is one cause of failure in first use, and hence of the prejudice old duckers have to these guns. They have also conceived that a certain quantity of powder was necessary to kill, and finding that this proportion produced great recoil and uncertainty of effect, have condemned the plan, without ascertaining that less powder was really necessary, from its more perfect combustion. Of the advantages of the percussion over the common gun, in this amusement, where wet days are often the most successful, nothing need be said as to the greater certainty of explosion; its merits are so well known, that in two years there will probably be few flint guns on the bay.

In this sport, it is all important to have guns that can bear a heavy charge without recoil, as great weight in the breech. Ordinary fowling pieces will not bear sufficient loads, and unless the bore be large, with a proportionate thickness of barrel, the large shot to be thrown, will not kill at a long distance. The most useful proportion for a double gun, is, weight of barrels from ten to eleven pounds; length, forty-two inches; calibre, thirteen-sixteenths of an inch. This proportion has been very accurately ascertained, not only by experiments in England, but even in our own city; and within two years many such guns have arrived, in which the employment has confirmed the principle. A few guns are in use, of a calibre of an inch and a half, and a weight of forty pounds, to be moved on a swivel. These have, on several occasions, killed eighty or one hundred birds at a time, but they are very unwieldy, and only employed when the Ducks are sitting. The size of shot best adapted to this sport, is still a disputed point; but the writer, and many of his friends, have arrived at the conclusion, that BB is the best for Ducks, and the smallest mould shot for Geese and Swan. The smaller the shot is, the greater the chance of striking, from the increase of the number of pellets; but unless it be of good size, it will not enter the feathers, and Canvass-backs are so thickly covered, that smaller shot will rarely kill. When on the water, at a moderate distance, No. 1 shot will be sufficiently large, and there being nearly double

the number of pellets, the birds struck will be in the same ratio.

But, notwithstanding the apparent facilities that are offered of success, this amusement is probably one of the *most* exposing to cold and wet, and those who undertake its enjoyment without a courage "screwed to the sticking point," will soon discover, that

"To one good, a thousand ills oppose."

It is, indeed, no parlour sport, and between creeping through mud and mire, often for hundreds of yards, to be at last disappointed, and standing exposed, on points, to the

"Pelting rain, or more than freezing cold,"

for hours, without even the promise of a shot, it would even try the patience of Franklin's *glorious nibbler*. It is, however, replete with excitement and charm, and to one who can enter on the pleasure, with a system formed for polar cold, and a spirit to endure

"The weary toil of many a stormy day,"

it will yeld a harvest of health and delight, that the "*roamer* of the woods" can rarely enjoy. I. T. S.

ADVICE TO YOUNG SPORTSMEN.

When young men first take the field in pursuit of game, they are full of expectations, excited by the prospects of enjoyment; and, possessing youth, health, and activity, seldom weigh the consequences of irregular habits, or the evils resulting from not observing a proper course of conduct, or the effect which the errors of their youth may have on their future life. Under these views, I have suggested the following advice:

In associating with companions for your hunting excursions, choose, if possible, those who are calm in their mind, and deliberate in their movements, and free from that blustering spirit, which too often manifests itself in sportsmen. You will thereby avoid much danger, and those accidents which are mostly the effect of rashness and carelessness.

Shun the company of a man who is continually cursing and swearing at his dogs, or on the slightest provocation, especially if he is unsuccessful in his enterprise, for it commonly happens, that persons of these dispositions and habits, do not subject themselves to restraint, and will find excuse, no matter how trivial, to vend their anger, most generally on their dogs, and attribute their want of success to the error of these animals, when it originates altogether in their own turbulent passions. Shun such contaminating breath, as you would a contagious disease, that affects your very vitals.

Never swear yourself, nor suffer any circumstance to make you commit yourself in a way that you would condemn in others; neither permit the contingencies attending hunting excursions, such as misbehaviour of your companions, or dogs, to ruffle your disposition or excite anger; if your companion claims a bird to which you are entitled, or which has been shot on the discharge of both your guns, compromise your feelings and let him have it: it is but a bird, and not worth quarrelling about; and, if he has been unjust in his claim, he will be ashamed of it. Should your dog commit error, chastise him, but keep yourself free from rage. Observing these rules, you will be more fitted for the pleasures of the field, more successful in your enterprise, and avoid many unpleasant feelings to yourself and companions; the labours of the day will end with calmness and pleasure, unmixed with rancorous feelings, and prove a period of recreation rather than toil. Choose cool weather for your season of shooting, your body then is more invigorated, and you will prevent considerable excitement and occasion for fever, which is more likely to attend warmer weather; beside, you perhaps can be better spared from your business.

Do not let your excursions be marked with cruelty, either towards your dogs, or the innocent objects of your search; let a moderate quantity of game suffice you always, and be not ambitious to excel, when that superiority is to be gained at the expense of much life, or labour ending in great fatigue to yourself. Beware displaying your art by shooting at harmless birds, such as swallows, robins, &c. for it is not only useless as a plan of practising to shoot, but cruel and disgraceful to him who employs it.

Disclaim all *braggarts* of shooting, and found your principles on their failure, for I never yet saw a braggart, but had to back his performances with heavy oaths. These, generally, are the poorest shots, and most certainly the worst companions; for the man who makes a statement, and endeavours to confirm it with an oath, is entirely unworthy of confidence and respect; beside, persons who habituate themselves to this disgraceful and ungentlemanly practice, engender feelings, which, in their nature, are not only callous to truth, but to every sense of propriety; and there is nothing too ridiculous or incredible, either for them to relate as truth, or to be swallowed by them as such, when related by others; this is strongly verified in an old saying, "that it is even possible for a man to tell a lie so often, as to believe it himself for truth." This principle is more common amongst those who idle their time with a gun, lounge about taverns and drink to excess, but who, in

the early stages of their career, might trace their decline to a "*flask of brandy,*" which they always provided for their hunting excursions.

I would advise you, therefore, to drink no spirituous liquors whatever, and discourage your friends from providing a flask of brandy, for you may rest assured that all artificial stimulants of this nature, are never productive of good, but injurious to the health and disposition of those who use them, for they only excite but to enervate, and, are oftentimes productive of broils between friends, which frequently end in separation, and sometimes deadly strife. The best allay for thirst, is from the fountain which *nature* has provided, and by slaking your thirst with pure water, you will be enabled to withstand the fatigues of the day with more comfort both to your body and mind.

It argues much against those who make frequent applications of the bottle, or are stopping at every tavern to procure a drink of liquor; these misgivings and derelictions of principle lead to further vice, and frequently bring the sportsman to a state of degradation, and the exercise of those habits which render him noxious to his family and friends, and to himself a source of disgust, and sometimes remorse.

To check these inroads of vice, the young sportsman, in the commencement of his career, should mark out for his future guidance, certain rules from which he ought never to depart. These rules should be founded on good principles, and by strictly observing them, he will subject all his pleasures to a proper sphere, tending much to sweeten life, and rob it of many of the concomitant evils, with which mortality is so replete. A celebrated writer justly observes, "that benevolence requires, that the pleasures of sense should be made entirely subservient to health of body and mind, so that each person may best fill his place in life; best perform the several relative duties of it; and, as far as in him lies, prolong his days to their utmost period, free from diseases and infirmities."

Thus, by viewing and forming all your gratifications as subordinate steps to health, you may freely, in this restricted sense, pursue the various modifications of pleasure, as auxiliaries to the enjoyment of life; and by bridling your desires, and discriminating between licentiousness and the moderate enjoyment of pleasure, and scrupulously adhere to the latter, you will no doubt lessen the anxiety of indulgent fathers, or earnest solicitude of affectionate mothers; escape many of the pains and ills of life, and pass down to a good old age, free from the keen retrospection of having prodigally wasted your early days in cruelty, and the pursuit of those enjoyments, which forever elude the grasp, and only excite hope, in order to disappoint.

D.

ANECDOTE OF A GREY FOX.

A FEW days since, two gentlemen of Burlington county, (N. J.), went out to hunt rabbits, each provided with a gun, and but one dog. In a low, bushy swamp, which they had just entered, the dog came upon the *form* of a grey Fox. Reynard, of course, left his seat, and the party went off in keen pursuit. After a chase of about two miles, he entered a very dense thicket, composed principally of underbush and twigs, and making a circuit of this place, in order to deceive his enemies, returned to the place from whence he was first started. On his way thither, one of the persons, (they had by this time separated,) shot at, and evidently struck him, as he made three or four somersets, rolling himself into the form of a ball, and fell; but, instantly recovering, he succeeded in reaching the swamp, hunted closely by the dog, from whence he was again routed by his industrious pursuer. He now made for the thicket again, two miles off; chance threw the other sportsman in his way, and the poor Fox fell apparently dead at his very feet; but ere the huntsman could secure him, he was gone. The thicket now became the scene of strife; Reynard played off his cunning full two hours and a half, (part of which was by moonlight,) but it availed him nothing, as victory was decided in favour of the indefatigable dog and his masters, and our friend *Vulpes* was sorely discomfited: he was carried home quite defunct as they thought, and thrown into a corner of the room. The family sat down to supper. Reynard, seeing all busily engaged, ventured to reconnoitre, and had cautiously raised himself on his fore-legs, no doubt for this purpose, but on finding himself observed, resumed his quiescent state. One of the party, in order to ascertain whether the Fox was really alive, or not, passed a piece of lighted paper under his nose, but the inanimate log or stone appeared not more senseless at that moment. Finding all attempts to get off unavailing, he submitted to his destiny with a very good grace, and next morning was as well as ever, bating a slight wound in the shoulder, and a dirty skin. Reynard, we understand, is to be kept in durance until New Year, when he is to be again loosed for further sport; but humanity would certainly dictate his final enlargement, especially as he exercised his cunning so admirably, to deceive his captors. He may, also, have suffered death, (in imagination,) in its thousand forms, and, although he may, in former days, have trespassed on some good dame's poultry yard, and committed sundry other depredations, such as stealing whole flocks of geese, by floating silently amongst, and drawing them, one by one, under water, &c. &c., we still think, that humanity should trace the discriminating line between cruelty and recreation, and suffer the "sly intruder" to escape with his life.

Dec. 22, 1830. T.

ANECDOTE OF A WILD GOOSE.

Captain S——, of N. J., while lying at anchor with his schooner, off Poole's Island, in the Chesapeake Bay, observed a Wild Goose, (which had been wounded,) attempt to fly from the top of a hill to the water, but being unable to reach its place of destination, alighted about midway of the hill, where some cattle were grazing; one of which seeing the stranger, and being unable exactly to make out its character, walked up, as is commonly the case with cattle, to smell it. The Goose, not fancying this kind of introduction, and perhaps unacquainted with the motives of the steer, seized him by the nose with so much firmness, as to set the creature bellowing; and he actually ran off a considerable distance, before he could disengage this new enemy from its hold. The Goose then made for the bay, where it was chased by two boats from the schooner, and after much diversion, and an hour and a half's labour, they succeeded in capturing it.

COMFORTS OF A SHOOTER.

After a long ride to your hunting ground, and finding plenty of game, to be ordered off by the proprietor, after killing but one bird; or wandering a long distance, to be overtaken by a heavy and continuous rain, or to be confined to the house, in consequence of a tremendous rain, after having travelled the day before, many miles with a view of having a good hunt.

To be in company with persons, whose dogs always flush the game, when yours are at a stand; or to have a companion, who, the instant the dogs point, runs up and flushes the game, before you get within shooting distance, or, (especially if you are a good shot, and himself an inferior one,) makes it his common practice to shoot at the same bird with yourself, and claim it as having been killed by him.

To have a companion, who, after shooting away all of his powder and shot, kills but one bird, attributes the fault to the gun, shot, or powder, and vends his angry feelings on his dog; after hunting all day, without seeing game, and towards evening the dogs come to a stand, expectation on tip-toe, but on coming up, find it to be either a lark, or where some partridges *have been*.

To be in company with a stranger, who professes to be a great shot but on trial of his skill, proves him as likely to shoot yourself or the dog, as the bird, in a mistake; or, to be intruded upon by some other sportsman, addicted to cursing, swearing, and hallooing at his dogs, sufficient to alarm a whole township.

Comforting yourself, in your ill success, with a prospect of having a good supper. On your return to the tavern, wet, cold, and hungry, find the fire out, and the meal prepared for you, to consist of stale bread, beefsteak burnt up, and pye with crust as tough as sole leather.

MISCELLANY.

A friend from Pendleton furnishes us with the following item of sporting intelligence. A young gentleman in Bath county, Mr. John Williams, recently killed two large Bucks, the horns of which were so interlocked that they could not disengage themselves. There is no doubt they had had a combat, and from observations which Mr. W. made, he supposed they had been in this condition for for several days. The horns were so securely fastened, that he could not separate them without breaking off one of the prongs. The Bucks were killed at two shots, and the one which escaped the first ball, carried the other about one hundred yards before he met a leaden death."—*Staunton (Va.) Spectator.*

RETALIATION.

It is well known that in the good old days of our fathers, when New England was truly the land of steady habits, there would occasionally spring up a volatile and fun-loving character, whose disposition and habits formed a striking contrast with the upright and conscientious bearing of the puritans. There were two farmers of this cast who lived very near each other; one of them was the owner of very fine sheep, but which, having a decided antipathy to confinement, would sometimes trespass on the enclosure of their master's neighbour. The other having caught them in one of these overt acts, determined to inflict summary vengeance on the intruders and their owner. With this intent he proceeded to catch them, and running his knife through one of their hind legs, between the tendon and the bone, immediately above the knee joint, but the other leg through the hole. In this condition the woolly flock decamped, leaving one quarter less tracks than when they came. The feeder of sheep kept his own counsel; and soon after, his neighbour's hogs having broken or dug into his enclosures, he took advantage of this opportunity for retaliation, by cutting their mouths from ear to ear. In this way, the four-footed grunters, rather *chop-fallen*, made their way to their own quarters. The owner of the swine soon made his appearance, in a great rage, declaring his hogs were ruined, and that he would have redress. His neighbour made answer, that it was he who ruined them, "For, the fact is, friend, I didn't cut open them are hogs' mouths, but seeing my sheep running on three legs, they split their mouths a laughing."

NEWFOUNDLAND DOG.

NEWFOUNDLAND DOG.

CANIS FAMILIARIS. VAR. SENSILIS.

[Plate V.]

Man exercises a more unlimited and singular sway over the Dog, than over any other animal; this is so complete that the whole species has become his property, each individual of it being identified with his master, whose orders, and even whose wishes, he is always solicitious to execute; he adopts his manners, and surrenders his own feelings and propensities with cheerfulness and alacrity, remaining faithful even under the severest treatment; he calmly suffers and forgets the most cruel outrages, or only remembers them to increase his devotion; and all this originates neither from necessity nor constraint, but appears to arise from innate feelings of gratitude, and true friendship. The speed, strength, and scent of the Dog, have constituted him a powerful ally of man against other animals, and his services have, in all probability, contributed in no slight degree to have reclaimed man from the savage state, and induced him to adopt the pastoral, or second grade of civilization.

In fact, it must be evident to every reflecting mind, that without the aid of this faithful animal, man could never have obtained the mastery he now holds over the rest of creation. To conceive the importance of this acquisition, let it be supposed that it had never been attained. Without the assistance of the Dog, how could man have attempted to reduce the other animals to a state of subjection? For his own safety, and to constitute himself master of the animated world, it was absolutely necessary to form an alliance with some of the animals themselves, and to conciliate such as were capable of attachment and obedience, in order to oppose them to such as were possessed of opposite qualities. Hence, the domestication of the Dog seems to have been almost coeval with the history of man in a social state, and the result has been the conquest of the earth.

The generic characters of the Dog are, having the face prolonged, and the naked, glandulous part of the nose more or less rounded; the cheeks somewhat elevated, the tongue smooth, and the ears erect, and pointed. This last character, however, becomes altered by domestication. Fore feet with five, and hinder feet with four toes, provided with strong, slightly curved nails, which are not retractile, as in the cats. The dental system in this genus is peculiar; there are in all forty-two teeth, namely, twenty in the upper jaw, and twenty-two in the lower, which are disposed as follows: Incisors $\frac{6}{6}$, canine $\frac{1-1}{1-1}$, molars $\frac{6-6}{7-8}$. The incisors are placed on the same line, and are trilobed before they have been much used. The canines are conical, acute, and smooth. The superior molars are six in number, on each side, viz. three small acute teeth or false cutting molars, having a single lobe, a bicuspid or carnivorous, and two small teeth with a flat crown. The inferior molars are seven in number, on each side, viz. four false molars, a carnivorous, and two tuberculous teeth. This genus, as we have mentioned in a former number, includes the domestic Dog, the fox, the wolf, and the jackal. All the species are endowed with very acute senses, especially that of smelling. They are carnivorous, even feeding on flesh, when in a putrid state; more or less intelligent. The generality of them unite in troops, for the purpose of taking their prey, which they follow by the scent. Some species live in burrows, but the greatest number inhabit woods and thickets.

The specific characters of the domestic Dog, as given by Desmarest, are: tail curved upwards in a greater or less degree; face more or less prolonged, or shortened; hair very various as to colour, though in almost every instance where the tail is varied with white, this colour is terminal. Linnæus assigned as a character of this species, that the tail inclined to the left side, but this, daily observation proves to be incorrect.

To dwell at greater length on the description or particular qualities of this well known animal, would be superfluous. Instead, therefore, of entering into a detail of his character and uses, we shall principally call the attention of our readers to the different opinions of naturalists, as respects the original species, with a few intances of his sagacity, attachment, and perseverance, as have occurred in the course of our reading.

It must be obvious, even to the most unobservant, how exceedingly Dogs differ, not only in their habits, faculties, and propensities, but also in the form and proportions of their bodies, the infinite and incessant mixture of races, and the ramification of crosses, rendering it almost impossible to enumerate each distinct breed or variety. This however, has been attempted by several naturalists. The first systematic arrangement of these animals, which we have met with, is that of Dr. Caius, who divivides them into three classes: 1. Those of a generous nature. 2. Farm Dogs; and 3. Mongrels. After the time of this author, numbers of classifications have been given, all more or less defective. Buffon has draw up an elaborate gencalogical table to prove that all the varieties may be traced back to the shepherd's dog, which he considers the original type, from its great sagacity. * In this table he not only attempts to class the different varieties, but also to give an idea of the mode in which they have been produced, by the influence of climate, and the commixture of breeds. It is constructed in the form of a geographical chart, so as to pre-

serve as much as possible the position of the different climates in which each variety is found. As has already been mentioned, the shepherd's Dog is assumed as the starting point. This variety, when transported into cold regions, becomes ugly and small; though in Russia he still maintains his distinctive characters; in temperate climates, and among perfectly civilised nations, he loses his savage air, his erect ears, his rude long hair, and assumes the form of the mastiff, bull dog, or hound, which latter is the most distant remove from the original stock. The hound, setter, and terrier, are of the same race, according to Buffon, and he states, that the same birth has produced all these varieties. If the hound be transported to Spain or Barbary, it will become either a spaniel or water Dog. The Irish greyhound, when taken to the north, is converted into the great Danish Dog; and when transported to the south, becomes the common greyhound. But it would be useless to pursue the opinions of this beautiful but theoretical writer, to a greater length, particularly as it is by no means proved that the original stock was identical with the shepherd's Dog.

Pennant has also given an arrangement of these animals, which is tolerably correct, though it is still deficient in many particulars. The best which has been presented to the world, is that of F. Cuvier, who has paid much attention to this intricate subject; this classification, which differs much from that of Buffon, has also been adopted by Desmarest, and is as follows. He first divides them into three groups; Matins, Spaniels, and Dogues.

I. Matins, or those Dogs having more or less elongated head, the parietal bones approaching each other, and the condyles of the lower jaw placed in a horizontal line with the upper jaw teeth.

Var. A. New Holland Dog. *C. f. Australasia.* Desm. *Dingo.* Shaw. Inhabits New Holland.
B. French Matin. *C. f. laniarius.* Linn. *Matin,* Buffon. France.
C. Danish Dog. *C. f. Danicus.* Desm. *Grand Danois.* Buffon.
D. Grey hound. *C. graius.* Linn. *Levrier,* Buffon. This variety is still further subdivided.
a. Irish grey hound.
b. Scotch grey hound.
c. Russian grey hound.
d. Italian grey hound.
e. Turkish grey hound.

In this group may also be placed the *Albanian* Dog.

II. Spaniels, or Dogs having the head very moderately elongated, the parietal bones do not approach each other above the temples, but diverge and swell out so as to enlarge the forehead and cerebral cavity.

Var. E. Spaniel. *C. f. extrarius.* Linn. This also, is divided into many subvarieties.
a. Small spaniel. *Le petit epagneul.* Buffon.
b. King Charles's spaniel. *C. brevipilis.* Linn. Le Gredin. Buffon.
c. *Le Pyrame.* Buffon. We have no English name for this Dog.
d. Maltese Dog. *C. melitaus. Bichon.* Buff.
e. Lion Dog. *C. leoninus.* Linn.
f. Calabrian Dog. This variety is originally from Spain, hence its English name.
F. Water spaniel. *C. aquaticus.* Linn. Grand barbet. Buffon.
a. Small water spaniel. *Petit barbet.* Buffon.
b. *Le Griffon.* The intelligence of these Dogs appears to be more susceptible of development than in any of the other varieties.
G. Hound. *C. f. gallicus.* Linn. *Chien courant.* Buffon.
H. Pointer. *C. avicularius.* Linn. *Braque.* Buffon.
a. Dalmatian pointer. *Braque de Bengal.* Buffon.
I. Turnspit. *C. f. vertagus.* Linn. *Basset à jambes droites.* Buffon.
a. Crooked legged turnspit. *Basset à jambes torses.* Buffon.
b. *Chien Burgos.* Buffon.
K. Shepherd's Dog. *C. f. Domesticus.* Linn.
L. Wolf Dog. *C. pomeranus.* Linn.
M. Siberian Dog. *C. sibiricus.* Linn.
N. Esquimaux Dog. *C. f. borealis.* 'Desm.
O. The Alco. *C. f. americanus.* Linn. To this group should also be added, the Alpine spaniel, the Newfoundland Dog, the setter, and the terrier.

III. Dogues, or Dogs having the muzzle more or less shortened, the skull high; the frontal sinuses large; the condyle of the lower jaw extending above the line of the upper jaw teeth. The cranium is smaller than in the two preceding groups.

Var. P. Bull Dog. *C. f. molossus.* Linn.
a. Thibet Dog.
Q. Mastiff. *C. f. anglicus.* Linn.
R. Pug Dog. *C. f. fricator.* Linn. *Le dogvin.* Buffon.
S. Iceland Dog. *C. f. islandicus.* Linn.
T. Small Danish Dog. *C. f. variegatus.* Linn.
U. Bastard Pug. *C. f. hybridus.* Linn. *Le roquet.* Buffon.
V. English Dog. *C. f. britannicus.* Desm.

Var. X. Artois Dog. Nearly approaching, and perhaps derived from R., now extinct.

Y. Andalusian Dog. *C. f. andalusia.* Desm. *Chien de cayenne.*

Z. Barbary Dog. *C. f. ægyptius.* Linn. *Chien turc.* Buffon.

It will be perceived, that this list only includes the well-marked varieties; there are hundreds of others, of which it is impossible to give any distinctive characters. Most of these are termed Mongrels, and by the French, *cheins de rue.*

When we consider even these varieties, it is evident, that the modifications of the original species have been immense, and that they have existed for so great a length of time, as to render it almost impossible to come to any definite conclusion on the subject; since, however, the shape of the head has attracted the attention of naturalists, it has been found that some domesticated Dogs correspond in this part of their configuration with the wild species much more than others, rendering it more than probable, that they are all collateral ramifications of the same original stock.

At the same time that this is admitted, it must be confessed that the perplexities attendant on this intricate point, although lessened, are by no means removed; for the question immediately recurs, what is this original stock, or primitive species? Is it the shepherd's Dog, as supposed by Buffon; or, did it arise from a union between the several species of the genus Canis; or finally, is it one or other of these species, modified by domestication, and other concurring circumstances?

From some experiments, which appear to have been conducted with great care, Buffon is of opinion as before stated, that the wolf and the fox are widely different in their natures from the Dog, and that their species are so distinct and remote from each other, as to prevent any sexual intercourse, at least, in a state of captivity, and observes "that the Dog did not derive his origin from either the wolf or the fox, and that those who regard these two animals as wild dogs, or who imagine the Dog to be a wolf or fox become domesticated, have deceived themselves."

In this, however, Buffon himself fell into an error, as Pennant, Daniel, Pallas, and others, all bring proofs that intercourse has taken place among the various species of the Dog kind and their congenus, but also, that these occurrences are by no means uncommon. In a menagerie, which was exhibited in 1828, in England, were two animals, from a cross between the wolf and the domestic Dog, which had been bred in that country. A similar circumstance is related by the celebrated John Hunter, in the Philosophical Transactions for 1787, and he thinks that it establishes the fact of the wolf and the Dog being of the same species; and, on the same ground, deduces the identity of the Dog and the jackal. This idea is also held by Pennant, who says, that the original stock of Dogs in the old world, is derived from the above mentioned animals, and that their tamed offspring, crossed with each other and with their parent stock, have gradually given rise to the numerous forms and sizes of the canine race.

There is one great obstacle to the adoption of these opinions, arising from the manner in which all varieties of the Dog carry their tails, differing in this respect from all the other species of the genus. Even the Esquimaux Dog, which is in a half reclaimed state, invariably carries his tail turned upward, whilst in the wolf of the same district, which he so closely resembles, it generally drops, especially when running. Dr. Richardson, however, states, "that the latter practice (of curving the tail upwards) is not totally unknown to the wolf; although that animal, when under the observation of man, being generally apprehensive of change, or on the watch, seldom displays this mark of satisfaction. I have, however, seen a family of wolves playing together, occasionally carry their tails curled upwards."

From a careful investigation of all the information we have been able to attain on this point, the opinion of Buffon, that the Dog is a separate and distinct species, appears the most plausible, though whether the shepherd's Dog was the original stock from which the numberless varieties now existing are derived, is very problematical.

The wild Dogs now found in various parts of the world, all appear to have originated from some of the domestic varieties, and to be easily reclaimable, never losing their respect for the human species. In fact, these animals never voluntarily separate themselves from man; even where they have no individual masters, they still frequent his abode. Thus they are found in this half-wild state in Lisbon, and in most of the Asiatic cities. In Cuba and India, however, they have partially assumed their native habits, hunting in packs, attacking and overcoming much superior animals, from their numbers.

The females go with young about sixty-three days, and generally produce from three to five at a birth, though, in some instances, the litters are much larger. The puppies are born blind, the eye being closed with a membranous substance, which, in about nine or ten days, is ruptured by the action of the upper eyelid. They also have their muzzle short and full, even in the varieties having elongated faces, as the greyhound; at the end of two months they begin to display their character, and to grow rapidly. In the fifth and sixth month they commence to shed their teeth, which are replaced, as in man, with others, which are never renewed. In the first months of their existence, both sexes discharge their urine in squatting down, but

towards the end of the year the Dog raises his leg in performing this act. The duration of a Dog's life is usually about fourteen or fifteen years, but they frequently suffer much from the effects of age. It is said, that the probable age of a Dog can be ascertained by an examination of his teeth; in the earlier years they are exceedingly white and sharp pointed; but the farther he advances in life, the more they become covered with calculous scales near the gums, discoloured in all parts, and blunt and unequal at their points; but a still more certain indication of age, is a grey and hoary tinge above the nose to the eyes, and upon the front; this begins to appear about the tenth or eleventh year, and continues to increase till the last stage of life.

As we have already observed, the Dog is carnivorous; he does not, however, eat every kind of animal food indiscriminately. Thus, most of the water birds which have a strong fishy taste, are rejected by him, except when urged by great hunger. He is possessed of such strong digestive powers, as to derive nourishment from the hardest bones. When flesh cannot be procured he will feed on fish, fruits, succulent vegetables, and bread; and, indeed, in those countries where dog's flesh is considered as a gastronomic delicacy, he is wholly fed on vegetable food. The Dog drinks by lapping up the water with his tongue: this organ, also, is the only part of his body from which he perspires, hence, whenever he is using any violent exercise, it is suffered to loll out of the mouth. Before lying down, he generally walks several times round the spot on which he intends to repose. He sleeps but little, and seldom profoundly, the slighest noise causing him to spring up. During the time he is asleep he frequently starts, or has a tremulous motion in his limbs.

Besides the usual employment of Dogs in this country, as guards, or for the chaise, they are extensively used by many nations to draw burdens, particularly among the inhabitants of the northern parts of this continent; and the weights they are capable of moving, especially over the ice, are truly astonishing. Captain Lyon, to whom we are indebted for an exceedingly interesting account of the Esquimaux variety of this animal, says he has seen a Dog draw one hundred and ninety-six pounds, the distance of a mile, in eight minutes. But their use as beasts of draught is not confined to these nations, the inhabitants of Holland have long used them for this purpose, and nothing is more common in Paris, than to see these animals dragging small carts with vegetables and meat.

In some countries the flesh of the Dog is considered as a great luxury; this is especially the case in China, and in New Zealand. When used for this purpose, they are never suffered to eat animal food, but are kept in cages, and fattened with vegetables. They are killed by strangling, and the extravasated blood is carefully collected, and also forms a culinary delicacy. They grow very fat, and are allowed, even by such of our countrymen as have tasted their flesh, to be very palatable. But the taste for the flesh of these quadrupeds is not confined to the Asiatic countries, some of the Indian nations of this continent have the same taste. We also find that the ancients considered the flesh of young Dogs to be excellent food. Hippocrates placed it on a footing with beef and mutton; the Romans, who were no slight adepts in the gastronomic art, likewise admitted sucking puppies among their delicacies.

Unfortunately, this sagacious and faithful animal is liable to disease, which is communicable to almost all animals that he may bite whilst labouring under it; the human species appears to be peculiarly liable, under such circumstances, to be inoculated with this horrible, and, alas! almost incurable malady. As other temporary diseases are sometimes mistaken for hydrophobia, we are induced to subjoin the following account of the symptoms, as laid down in a work on this disorder, by Chaussier and Orfila.

"When this disease is in its forming stage, a Dog is sick, languid, and more dull than usual. He seeks retired spots, remains in a corner, does not bark, but growls continually, at strangers, and refuses to eat or drink, without any apparent cause. His motions are unsteady, resembling those of a man almost asleep. At the end of three or four days, he leaves his master's house, and roves about in all directions; walking or running as if intoxicated, and has frequent falls. His hair is bristled up, his eyes haggard, fixed and sparkling; his head hangs down; his mouth is open, and full of frothy saliva; his tongue is protruded, and his tail hangs between his legs. He has, in most cases, but not invariably, a horror of water, the aspect of which seems to exasperate his sufferings. He experiences, at repeated intervals, transports of fury, and strives to bite every object which presents itself, not even excepting his own master, whom, in fact, he now scarcely recognizes. At the end of about thirty-six hours he dies in convulsions."

There are few diseases in which quacks have more successfully imposed on the credulity of mankind, or in which even the best directed treatment has proved more ineffectual. At one time, great reliance was placed in the Ormskirk remedy, which was superseded by a host of pretended antidotes derived from the vegetable kingdom, and what is extraordinary, from the most inert of these productions, such as chickweed, anagalis, water plaintain, and the skull-cap, none of which possess the slightest medical properties. Some persons rely on what is termed worming

a Dog, as a preventative to his being attacked with madness; this is absurd and utterly useless.* The nature of our work will not permit us to enter on this subject at greater length, we must therefore refer such of our readers as wish further information on the subject, to the treatise above alluded to. There is one precaution, however, that should always be borne in mind; that where a Dog bites any person, the animal should not be killed, but, should be securely confined, that the fact of the madness may be positively ascertained.

The variety of Dog so well known under the name of Newfoundland, has generally been considered by Naturalists as a mongrel, allied to the Esquimaux and Indian; but this opinion is evidently erroneous, as he differs from those varieties in the form of his head, and the general robustness of his figure. When full bred, and uncontaminated by the blood of any inferior variety, he is certainly the most imposing and noble of the canine race. Although, at first sight, his great size and strength convey a sensation of fear, the mild and expressive character of his countenance manifests that ferocity is far from being a predominant or distinguishing trait of his character.

Extremely docile and affectionate, this Dog may be taught to perform actions which appear almost incredible, and which, seemingly, require no slight exercise of the reasoning faculties. Equally sagacious as persevering, he never relinquishes an undertaking as long as there remains the most distant hope of success. He seldom or never offers offence, but will not receive an insult or injury with impunity. The great pliability of his temper, peculiarly fits him for the use of man, as he never shrinks from any task that may be assigned him, but undertakes it with an ardour proportioned to the difficulty of the execution. A full sized Newfoundland Dog, from the nose to the end of the tail, measures about six feet and a half, the length of the tail being about two feet; from one fore foot to the other over the shoulders, three feet four inches; round the head across the ears, two feet; round the upper part of the fore leg, ten inches; length of the head, fourteen inches. The feet are webbed, by which means he can swim with great quickness and facility. The body is covered with long shaggy hair; that on the legs and tail being very thick and long. This Dog is not remarkable for symmetry of proportions, and his motions are heavy; consequently, he is not distinguished for speed.

We are indebted to J. Browne Smith, Esq. for an opportunity of figuring this majestic animal, from a remarkably fine and well marked specimen in his possession. The Philadelphia Museum is also enriched by a well prepared example of this Dog, which formerly belonged to Mr. Wistar, of Germantown. Both these animals, though not so large as the dimensions we have just given, afford excellent criteria of the form and general proportions of the animal.

The Newfoundland Dog is habitually used in its native country for the purposes of draught. They are easily broken in, and soon inured to the trammels of harness; three, four, or five are used in a sledge or other vehicle, and will convey a load of some hundreds weight for many miles with great ease. This, when once instructed in and accustomed to the road, they will do without any supervision; and having delivered the load with which they have been entrusted, will return to the residence of their master, to receive their accustomed food, which generally consists of fish, either fresh or in a dried state, of both of which they are said to be extremely fond. Captain Brown* states, that in 1810, it was computed that there were upwards of two thousand of these Dogs, at and in the vicinity of St. John's, Newfoundland. They are left to shift for themselves during the whole summer, and are not only troublesome to the inhabitants, but become absolute nuisances, from starvation and disease. Contrary to their natural disposition, where properly taken care of, under these circumstances, they assemble in packs and prowl about like wolves for their prey, destroying sheep, poultry, and every thing eatable within their reach. When the fishing season is over, and their inhuman masters again require their services, they are reclaimed, and submit with cheerfulness to the tasks which are assigned them. The same author states, that this reclamation always gives rise to much confusion and litigation, the value of these periodically deserted animals being estimated at from two to eight pounds each.

In the year 1815, a dangerous disease resembling hydrophobia appeared among them, owing, as was generally supposed, to the hardships and starvation to which they were subjected. Persons bitten by them exhibited no symptoms of hydrophobia; and the disease was attributed, by the medical men of the island, to a fever induced by severe labour, with insufficient nourishment upon salted food, and a scarcity of water, caused by the frozen state of

* As some of our readers may be unacquainted with this operation, we subjoin it. The worm, as it is termed, is the ligament which connects the tongue to the under part of the mouth. The tongue is to be raised, and the skin which covers the worm slit; a small awl is then to be introduced under the centre of it, to raise it up; the farther end will make its appearance by a little force being used, and by being taken hold of with a piece of cloth, it may be easily removed. Great care must be taken not to break it. This operation should be performed at the time the pups are removed from the mother. It is said to prevent the Dog from biting if he should be affected with madness, and to have proved perfectly efficacious in more than one instance; but this is at best but problematical.

* Biographical Sketches and Authentic Anecdotes of Dogs, p. 198.

all the streams. Even while it is plenty, their unfeeling proprietors scarcely allow the exhausted animals time to slake their thirst.

The qualifications of this Dog are not, however, confined to drawing burdens; as a watch Dog he is far more intelligent, and more to be depended on than the mastiff; and his services on navigable rivers are unequalled by any other of the species; he has even been broken in as a pointer, his sagacity and docility rendering his training an easy task.

There are, however, some faults to which he is unfortunately too prone;—he is a most implacable enemy to sheep; when engaged in chase of a flock of these animals, he generally singles out one of them, and if not prevented, which is no easy task, will never relinquish the pursuit until he has attained and mastered his victim. He always aims at the throat, but after having sucked the blood, leaves the carcass. He is, also, but too often inclined to be jealous of attentions paid by his master, either to other Dogs, or even to children; of this disposition we are acquainted with many instances.

The Newfoundland Dog, in his native country, seldom barks, and that, only when much provoked. His utterance appears an unnatural exertion, producing a noise between a bark and a growl. His well known partiality for water, in which he appears in his proper element, diving and keeping beneath the surface for a considerable time, need not be commented on. The generality of the Dogs known under the name of Newfoundland, both in England and this country, are only half breed.

We subjoin a few anecdotes of this animal, which we have derived from the work above cited.

One of the magistrates of Harbour Grace had an animal of this kind, which was in the habit of carrying a lantern before his master at night, as steadily as the most attentive servant could do; stopping short when he made a stop, and proceeding when he saw him disposed to follow. If his owner were from home, as soon as the lantern was fixed in his mouth, and the command given, "Go fetch thy master," he would immediately set off, and proceed directly to the town, which lay at the distance of more than a mile from his place of residence. When there, he stopped at the door of every house, which he knew his master was in the habit of frequenting, and laying down his lantern would growl and beat at the door, making all the noise in his power, until it was opened. If his owner was not there, he would proceed farther in the same manner until he found him. If he had accompanied him only once to a house, this was sufficient to induce him to take that house in his round.

Mr. Peter Macarthur informs me, says Capt. Brown, that in the year 1821, when opposite to Falmouth, he was at breakfast with a gentleman, when a large Newfoundland Dog, all dripping with water, entered the room, and laid a newspaper on the table. The gentleman informed the party, that this Dog swam regularly across the ferry every morning, went to the post office, and obtained the papers of the day.

We might multiply these anecdotes, but the space allotted to this subject will only permit to add the following: we would, however, refer our readers to Captain Brown's work, as presenting the most astonishing and almost incredible instances of sagacity in Dogs that have ever been presented to the public.

A Mr. M'Intyre, in Edinburgh, possesses a half-breed Newfoundland Dog, of which the author, after relating some extraordinary anecdotes, says, "A number of gentlemen, well acquainted with Dandie, are daily in the habit of giving him a penny, which he takes to a baker's shop and purchases a roll. One of these gentlemen was accosted by the Dog in expectation of his usual present. Mr. T. said, I have not a penny with me to-day, but I have one at home." On his return to his house, he heard a noise at the door, which was opened by the servant, when in sprang Dandie to receive his penny. In a frolic, Mr. T. gave him a bad one, which he, as usual, carried to the baker, but was refused his bread. He immediately returned to Mr. T.'s, knocked at the door, and when the servant opened it, laid the penny at his feet, and walked off, seemingly with the greatest contempt. Although Dandie, in general, makes an immediate purchase of bread with the money he receives, yet the following circumstance clearly demonstrates that he possesses more prudent foresight than many who are reckoned rational beings. One Sunday, when it was very unlikely that he could have received a present of money, Dandie was observed to bring home a loaf. Mr. M. being somewhat surprised at this, desired the servant to search the room to see if any money could be found. While she was engaged in this task, the Dog seemed quite unconcerned till she approached the bed, when he ran to her, and gently drew her back from it. Mr. M. then secured the Dog, which kept struggling and growling, while the servant went under the bed, where she found 7 1-2 pence, under a bit of cloth; after this he was frequently observed to hide his money in a corner of a saw pit, under the dust."

Notwithstanding the vigilance and watchfulness of this animal, he, like most others of his species, is terrified at the sight of a naked man. A tan-yard in Kilmarnock, in Scotland, was robbed by a thief, who took this method of overcoming the courage of a powerful Newfoundland Dog. This terror of Dogs at the sight of persons without clothes, arises from their being unaccustomed to such objects, and

it appears to pervade most animals. In Schipp's curious memoir of his life, he mentions that a captain in East India Company's service, was out shooting in India, he suddenly came on a large tiger, just as he had discharged his gun, he had no time to load again, but for a time stood his ground. At last he thought of a stratagem to put his unwelcome neighbour to flight, this was by turning his back to the animal and looking at it through his legs. He declared, that the moment the tiger saw this strange attitude, he took to his heels, and was out of sight in a few moments.

INSCRIPTION

ON THE

MONUMENT OF A NEWFOUNDLAND DOG.

BY LORD BYRON.

When some proud son of man returns to earth,
Unknown to glory, but upheld by birth,
The sculptur'd art exhausts the pomps of woe,
And storied urns record who rest below;
When all is done, upon the tomb is seen,
Not what he was, but what he should have been:
But the poor Dog, in life the firmest friend,
The first to welcome, foremost to defend;
Whose honest heart is still his master's own,
Who labours, fights, lives, breathes, for him alone,
Unhonour'd falls, unnoticed all his worth,
Denied in Heaven the soul he held on earth:
While man, vain insect! hopes to be forgiven,
And claims himself a sole exclusive Heaven!
Oh, man! thou feeble tenant of an hour,
Debas'd by slavery, or corrupt by power,
Who knows thee well, must quit thee with disgust,
Degraded mass of animated dust!
Thy love is lust, thy friendship all a cheat,
Thy smiles hypocrisy, thy words deceit!
By nature vile, ennobled but by name,
Each kindred brute might bid thee blush for shame.
Ye! who, perchance, behold this simple Urn,
Pass on—it honours none you wish to mourn:
To mark a Friend's remains these stones arise,
I never knew but one, and here he lies.

THE SLOTH.

From Waterton's Wanderings in South America.

Let us now turn our attention to the Sloth, whose native haunts have hitherto been so little known, and probably little looked into. Those who have written on this singular animal have remarked that he is in a perpetual state of pain, that he is proverbially slow in his movements, that he is a prisoner in space, and that as soon as he has consumed all the leaves of the tree upon which he had mounted, he rolls himself up in the form of a ball, and then falls to the ground. This is not the case.

If the naturalists who have written the history of the Sloth, had gone into the wilds, in order to examine his haunts and economy, they would not have drawn the foregoing conclusions; they would have learned, that though all other quadrupeds may be described while resting upon the ground, the Sloth is an exception to this rule, and that his history must be written while he is in the tree.

This singular animal is destined by nature to be produced, to live and to die in trees; and to do justice to him, naturalists must examine him in this his upper element. He is a scarce and solitary animal, and being good food, he is never allowed to escape. He inhabits remote and gloomy forests, where snakes take up their abode, and where cruelly stinging ants and scorpions, and swamps, and innumerable thorny shrubs and bushes, obstruct the steps of civilized man. Were you to draw your own conclusions from the descriptions which have been given of the Sloth, you would probably suspect, that no naturalist has actually gone into the wilds with the fixed determination to find him out and examine his haunts, and see whether nature has committed any blunder in the formation of this extraordinary creature, which appears to us so forlorn and miserable, so ill put together, and so totally unfit to enjoy the blessings which have been so bountifully given to the rest of animated nature; for, as it has formerly been remarked, he has no soles to his feet, and he is evidently ill at ease when he tries to move on the ground, and then it is that he looks up in your face with a countenance that says, "Have pity on me, for I am in pain and sorrow."

It mostly happens that Indians and Negroes are the people who catch the Sloth, and bring it to the white man: hence it may be conjectured that the erroneous accounts we have hitherto had of the Sloth, have not been penned down with the slightest intention to mislead the reader, or give him an exaggerated history, but that these errors have naturally arisen by examining the Sloth in those places where nature never intended that he should be exhibited.

However, we are now in his own domain. Man but little frequents these thick and noble forests, which extend far and wide on every side of us. This, then, is the proper place to go in quest of the Sloth. We will first take a near view of him. By obtaining a knowledge of his anatomy, we shall be enabled to account for his movements hereafter, when we see him in his proper haunts. His fore-legs, or, more correctly speaking, his arms, are apparently much too long, while his hind legs are very short, and look as if they could be bent almost to the shape of a corkscrew. Both the fore and hind legs, by their form, and by the manner in which they are joined to the body, are quite incapacitated from acting in a perpendicular direction, or in supporting it on the earth, as the bodies of other quadrupeds are supported, by their legs. Hence, when you place him on the floor, his belly touches the ground. Now, granted, that he supported himself on his legs like other animals, nevertheless he would be in pain, for he has no soles to his feet, and his claws are very sharp and long, and curved; so that, were his body supported by his feet, it would be by their extremities, just as your body would be were you to throw yourself on all fours, and try to support it on the ends of your toes and fingers—a trying position. Were the floor of glass, or of a polished surface, the Sloth would actually be quite stationary; but as the ground is generally rough, with little protuberances upon it, such as stones, or roots of grass, &c., this just suits the Sloth, and he moves his fore-legs in all directions, in order to find something to lay hold of; and when he has succeeded, he pulls himself forward, and is thus enabled to travel onwards, but at the same time in so tardy and awkward a manner, as to acquire him the name of Sloth.

Indeed, his looks and his gestures evidently betray his uncomfortable situation; and as a sigh every now and then escapes him, we may be entitled to conclude that he is actually in pain.

Some years ago I kept a Sloth in my room for several months. I often took him out of the house, and placed him upon the ground, in order to have an opportunity of observing his motions. If the ground were rough, he would pull himself forwards by means of his fore-legs, at a pretty good pace; and he invariably shaped his course towards the nearest tree. But if I put him upon a smooth and well-trodden part of the road, he appeared to be in trouble and distress: his favourite abode was the back of a chair; and after getting all his legs in a line upon the topmost part of it, he would hang there for hours together, and often, with a low and inward cry, would seem to invite me to take notice of him.

The Sloth, in its wild state, spends its whole life in the trees, and never leaves them but through force, or by accident. An all-ruling Providence has ordered man to tread on the surface of the earth, the eagle to soar in the expanse

of the skies, and the monkey and squirrel to inhabit the trees: still these may change their relative situations without feeling much inconvenience: but the Sloth is doomed to spend his whole life in the trees; and, what is more extraordinary, not *upon* the branches, like the squirrel and the monkey, but *under* them. He moves suspended from the branch, he rests suspended from it, and he sleeps suspended from it. To enable him to do this, he must have a very different formation from that of any other known quadruped.

Hence, his seemingly bungled conformation is at once accounted for; and in lieu of the Sloth leading a painful life, and entailing a melancholy and miserable existence on its progeny, it is but fair to surmise that it just enjoys life as much as any other animal, and that its extraordinary formation and singular habits are but further proofs to engage us to admire the wonderful works of Omnipotence.

It must be observed, that the Sloth does not hang head-downwards like the vampire. When asleep, he supports himself from a branch parallel to the earth. He first seizes the branch with one arm, and then with the other; and after that, brings up both his legs, one by one, to the same branch; so that all four are in a line: he seems perfectly at rest in this position. Now, had he a tail, he would be at a loss to know what to do with it in this position: were he to draw it up within his legs, it would interfere with them; and were he to let it hang down, it would become the sport of the winds. Thus his deficiency of tail is a benefit to him; it is merely an apology for a tail, scarcely exceeding an inch and a half in length.

I observed, when he was climbing, he never used his arms both together, but first one and then the other, and so on alternately. There is a singularity in his hair, different from that of all other animals, and, I believe, hitherto unnoticed by naturalists; his hair is thick and coarse at the extremity, and gradually tapers to the root, where it becomes fine as the finest spider's web. His fur has so much the hue of the moss which grows on the branches of the trees, that it is very difficult to make him out when he is at rest.

The male of the three-toed Sloth has a longitudinal bar of very fine black hair on his back, rather lower than the shoulder-blades; on each side of this black bar there is a space of yellow hair, equally fine; it has the appearance of being pressed into the body, and looks exactly as if it had been singed. If we examine the anatomy of his fore-legs, we shall immediately perceive by their firm and muscular texture, how very capable they are of supporting the pendent weight of his body, both in climbing and at rest; and, instead of pronouncing them a bungled composition, as a celebrated naturalist has done, we shall consider them as remarkably well calculated to perform their extraordinary functions.

As the Sloth is an inhabitant of forests within the tropics, where the trees touch each other in the greatest profusion, there seems to be no reason why he should confine himself to one tree alone for food, and entirely strip it of its leaves. During the many years I have ranged the forests, I have never seen a tree in such a state of nudity; indeed, I would hazard a conjecture, that, by the time the animal had finished the last of the old leaves, there would be a new crop on the part of the tree he had stripped first, ready for him to begin again, so quick is the process of vegetation in these countries.

There is a saying amongst the Indians, that when the wind blows, the Sloth begins to travel. In calm weather he remains tranquil, probably not liking to cling to the brittle extremity of the branches, lest they should break with him in passing from one tree to another; but as soon as the wind rises, the branches of the neighbouring trees become interwoven, and then the Sloth seizes hold of them, and pursues his journey in safety. There is seldom an entire day of calm in these forests. The trade-wind generally sets in about ten o'clock in the morning, and thus the Sloth may set off after breakfast, and get a considerable way before dinner. He travels at a good round pace; and were you to see him pass from tree to tree, as I have done, you would never think of calling him a Sloth.

Thus, it would appear that the different histories we have of this quadruped are erroneous on two accounts: first, that the writers of them, deterred by difficulties and local annoyances, have not paid sufficient attention to him in his native haunts; and secondly, they have described him in a situation in which he was never intended by nature to cut a figure; I mean on the ground. The Sloth is as much at a loss to proceed on his journey upon a smooth and level floor as a man would be who had to walk a mile in stilts upon a line of feather beds.

One day, as we were crossing the Essequibo, I saw a large two-toed Sloth on the ground upon the bank; how he had got there nobody could tell: the Indian said he had never surprised a Sloth in such a situation before: he would hardly have come there to drink, for both above and below the place, the branches of the trees touched the water, and afforded him an easy and safe access to it. Be this as it may, though the trees were not above twenty yards from him, he could not make his way through the sand time enough to escape before we landed. As soon as we got up to him he threw himself upon his back, and defended himself in gallant style with his fore-legs. "Come, poor fellow," said I to him, "if thou hast got into a hobble to-day, thou shalt not suffer for it: I'll take no advantage of thee in mis-

fortune; the forest is large enough both for thee and me to rove in: go thy ways up above, and enjoy thyself in these endless wilds; it is more than probable thou wilt never have another interview with man. So fare thee well." On saying this, I took up a long stick which was lying there, held it for him to hook on, and then conveyed him to a high and stately Mora. He ascended with wonderful rapidity, and in about a minute he was almost at the top of the tree. He now went off in a side direction, and caught hold of the branch of a neighbouring tree; he then proceeded towards the heart of the forest. I stood looking on, lost in amazement at his singular mode of progress. I followed him with my eye till the intervening branches closed in betwixt us: and then I lost sight for ever of the two-toed Sloth. I was going to add, that I never saw a Sloth take to his heels in such earnest; but the expression will not do, for the Sloth has no heels.

That which naturalists have advanced of his being so tenacious of life, is perfectly true. I saw the heart of one beat for half an hour after it was taken out of the body. The wourali poison seems to be the only thing that will kill it quickly. On reference to a former part of these wanderings, it will be seen that a poisoned arrow killed the Sloth in about ten minutes.

So much for this harmless, unoffending animal. He holds a conspicuous place in the catalogue of the animals of the new world. Though naturalists have made no mention of what follows, still it is not less true on that account. The Sloth is the only quadruped known, which spends its whole life from the branch of a tree, suspended by his feet. I have paid uncommon attention to him in his native haunts. The monkey and squirrel will seize a branch with their fore feet, and pull themselves up, and rest or run upon it; but the Sloth, after seizing it, still remains suspended, and suspended moves along under the branch, till he can lay hold of another. Whenever I have seen him in his native woods, whether at rest, or asleep, or on his travels, I have always observed that he was suspended from the branch of a tree. When his form and anatomy are attentively considered, it will appear evident that the Sloth cannot be at ease in any situation, where his body is higher, or above his feet. We will now take our leave of him.

OBSERVATIONS ON THE NATURAL HISTORY OF THE CHAMELEON.

By ROBERT SPITTAL, Esq.

The singular habits of the Chameleon have ever excited popular astonishment, and from their peculiar interest, claimed in a high degree the attention of the natural historian; and though it be now some time since, through his aid, many singular, but erroneous conclusions, concerning the nature and habits of this animal, have been dissipated, still we trust that the few remarks we intend to make, from personal observation—having had two of these animals in our possession for several months, some time ago—will not be deemed unworthy of attention.

That the particular species to which our observations apply, may be identified, we may mention that it is designated by Baron Cuvier, in his *Regne Animal*, "Le Chaméléon ordinaire." It is a native of Europe, Asia, and Africa. Those in our possession were brought from the south of Spain, and measured about five inches in length, exclusive of the tail. On being touched, they conveyed an impression of cold to the hand, and, like other cold-blooded animals, were very sluggish in their motions; and, indeed, we have frequently observed them remain in the same posture, for hours together, firmly embracing the twig on which they stood, with their toes, having at the same time, the tail generally twisted around the same, or some adjacent twig.

When excited to motion, by the appearance of a fly, not within the range of their power, or otherwise, they proceeded very slowly from branch to branch, moving first one extremity, then another, at the same time securing themselves by their tails; and we have often observed them trust entirely to this organ, when descending from twig to twig, and sometimes been impressed with the similarity between their motions and those of some of the monkey tribes, having prehensile tails.

Sluggish though the Chameleon generally be, there are particular organs which form eminent exceptions to this general remark, and this is particularly the case with the eyes. These organs, except when the animals were asleep, were used with great alacrity; and it is no exaggeration to say, that they were continually rolling in all directions, with the singular peculiarity of each eye having an independent motion, as mentioned by Cuvier and others. This fact we have frequently observed; and it was not an uncommon thing to see one eye directed upwards, and the other downwards; or one backwards, and the other in an opposite direction, at the same time. Thus, in a beautiful manner, one function is made to compensate for the want of another; for, though naturally sluggish in the motion of its body generally, it enjoys a more extensive sphere of vision than any other animal in similar circumstances; and is thus enabled to discover its prey over a much larger surface, than, did it not possess the extensive motion of its eyes mentioned, it otherwise could.

They lived entirely upon insects, and these were tempted to approach by besmearing the twigs in the cage with honey.

On observing one—which was easily known by their keeping one or both eyes stedfastly fixed on it for a short time—the method of attack pursued was to the following effect. They slowly moved towards their prey, as if afraid to disturb it; at the same time keeping their eyes firmly fixed upon the insect until within a few inches of it, then on a sudden darting forth the tongue, and as suddenly withdrawing it, they secured their prey, which very voracious mastication and deglutition soon disposed of.

The greatest distance to which we have observed the tongue protuded, was about five inches, generally less, never more. This organ, protruded by strong muscular power, is, we believe, chiefly returned to the mouth by an apparatus attached to its base, which acts by its resiliency, in a somewhat similar way to the elasticity of a silk purse, when drawn out, and suddenly let go. The better to enable them to seize their prey, the extremity of the tongue folds up to a slight extent, somewhat like the extremity of the proboscis of an elephant; and moreover the organ is coated with an adhesive matter.

According to the quantity of air in the lungs, the lateral dimensions of the Chameleon are more or less extended. We have observed them more than an inch and a half in breadth across the chest; sometimes, however, compressed to less than half an inch; their usual bulk was the medium between these.

That the change of colour has an intimate relation to the bulk of the animal, or, in other words, to the quantity of air in the lungs, there is every evidence; and we shall now make a few remarks on that singular phenomenon, stating the various changes of colour observed, and at the same time the circumstances in which the animals were placed at the moment. The usual colour observed during the day, was a mixture of various shades of green, in irregular spots; towards the head, these, however, sometimes assumed the form of stripes: sometimes these colours were slightly mixed with yellowish patches, and at other times with dark purple spots.

Such were their usual colours for the most part of the day, while moving about, undisturbed in their cage, or amongst the twigs of a plant, in the search of food. When of the greenish hue mentioned, it was sometimes difficult to discover them amongst the leaves; and indeed it seems probable that this may be a provision of nature, to enable the Chameleon to procure its food, which consists chiefly of insects; and these, had the animal been of a colour more distinct from that of its natural habitation, trees, might have been deterred from approaching within a tangible distance.

At night, when asleep, the colour was of a yellow hue. Being desirous to ascertain the effect of light on them, while of that colour, we placed, for this purpose, a lighted candle, about three or four inches from the side of one of these animals, and allowed it to remain for a few minutes, the effect of which was, that light brown spots began to appear, at irregular distances, on the side next the light. These spots gradually deepened in colour, until they attained that of a dark brown. On the removal of the light to a distance, the spots as gradually disappeared, and the animal assumed its usual yellowish hue.

A similar effect took place on imitating a shower of rain, by sprinkling water over the animals, but in a more rapid manner than on the application of the light.

These two experiments we repeated several times, with similar results; and we believe the appearance of these spots to be owing to the irritation produced, in the first instance, by the heat and light; in the second, by the mechanical irritation of the water. The animals never awoke during these experiments, except when the artificial rain was too heavy, or continued for a long time.

Shortly after these animals came into our possession, one of them escaped from the greenhouse in which they resided for a time; and it was not until after a very diligent search, that we discovered it amongst some long grass, of a colour which surprised us much. It appeared at first sight to be speckled black and white; on closer examination, however, the dark colour was purple, the light apparently a pale yellow. These colours were in large irregular patches.

While of this hue, its dimensions were unusually small, its sides were much compressed, and we may state generally, that when of a dark colour, they were usually in a compressed state; for though in the case just mentioned there was an approach to a white at some places, still the dark colour was most profuse.

On one occasion, we remarked the effects of strong passion on these animals. Wishing to take one of them out of the cage in which they were usually confined, and approaching the hand towards it for that purpose, the animal retreated for a little at first, then on a sudden turned round and seized one of our fingers, without further mischief, however, than slightly raising the cuticle. At this moment the colour changed from the usual greenish mixture to that of a yellowish grey, spotted over, at the same time, with numerous red points, about the size of the head of a pin, while the animal became more bulky than we had ever seen it.

Some days before death, which took place, partly, in consequence of the inclemency of the weather, but particularly, we believe, in consequence of the want of food at the time, the flies having nearly all disappeared, worms and other small animals were rejected, they gradually became weaker and weaker, left the twigs, and came to the

floor of the cage. While in this weak state, their colour differed from any we ever observed them to assume while in health. They became of the following hues, viz. yellow and purple. These colours were in large irregular patches, and seemed gradually to brighten as the animals became weaker, until on death they were brightest.

With regard to the transparent property of the body of the Chameleon, we have only to say, that on one occasion, we are tolerably sure that we observed the shadow of the wires of the cage, during the bright sunshine, through the body of one of them, while in a compressed state.

These remarks, we think, seem to show that the existing opinions, which attribute the change of colour to the action of the lungs, as the chief cause, is correct; not we believe entirely, however, owing to the change of colour of the blood, according to the respiration, transmitted by the skin; but conjointly, with its effects on the integuments, rendering them more or less tense or flaccid; and thus enabling the surface to reflect different rays of light at different times, according to the state of the integuments.

It is curious to observe the opinions of naturalists concerning the change of colour in the Chameleon, and we have here subjoined those of the authors we have consulted on this point, in a tabular form.

AUTHORS.	Opinions concerning the causes of Change of Colour.
Aristotle.	The change of colour takes place when the animal becomes inflated.
Pliny.	Takes the colour of bodies which it approaches, except red and white.
Worm. 1655. Swammerdam.	From affections of the mind of animal. Ridiculous.
The Cartesians. *Kircher. Goddard.*	By disposition of parts that compose the skin giving a different modification to rays of light. Imagination of animal. Granules on skin reflecting colour of bodies adjacent.
Sennini.	Their different affections increase or diminish the intensity of the tints of colour.
Author in *Rees's* Encycloped. who quotes the preceding five Authors.	Skin yellow; blood violet; change in consequence of different quantities of blood driven into skin at different times.
Encyc. Brit.	Changes on exposure to sun; colour seems to depend on state of health, temperature, and other unknown causes.
Encyc. Edin.	Lungs render skin more or less transparent, and also change the colour of the blood according as inflated.
Linnæus, System. Nat.	Perhaps from being seized with a kind of jaundice.
Goldsmith, Animat. Nat.	Not from colour of objects it approaches.
Hasselquist.	From being very subject to jaundice.
Shaw, Nat. Hist.	From exposure to sun, changes colour.
Russell, Nat. Hist. Aleppo.	From objects on which they happen to be placed.
Fleming, Philos. of Zool.	According to states of animal.
French Academicians.	From exposure to sun.
Lacepede, Ovip. Quad.	Fear, anger, and heat.
D'Obsonville.	Blood violet; vessels and skin yellow; hence upon quantity of blood driven to skin depends colour.
Dumeril, Dict. de Sciences Nat.	According as blood is sent more or less rapidly in contact with the fresh air inspired.
Cuvier, Regne Anim.	According to their wants and passions, lungs render body more or less transparent, and force the blood more or less to flow towards the skin: that fluid coloured more or less brightly according to quantity of air taken into lungs.
Barrow, Travels in Africa.	From quantity of oxygen in lungs.

These quotations show that the opinions of naturalists on this subject are very various, and even contradictory. However, with the exception of a few, including Dr. Russell and Pliny, all seem to agree, that the colour of the Chameleon does not depend on that of the body on which it happens to be placed.

Dr. Russell drew his conclusions from observing, that sometimes, while on a tree, the colour of the animal approached to that of the bark; and again, while on the grass, after some time it became of a green hue. Now, these two colours are the most usual, as far as our observation goes, which the Chameleon assumes, however situated. Coincidences such as these however, we admit, are certainly liable to mislead, especially those, setting about an inquiry of this nature, under the influence of a preconceived theory. But indeed, Dr. Russell at the same time admits, that the Chameleon does not always assume the colour of the ground on which it is placed, and states, that, when put into a box lined with black, it sometimes became lighter in colour, and *vice versa* when put into a white one. Another objection to this theory is, that the Chameleon retains its hue for some time after removal from the spot where it had become of any particular colour, which could not be the case did it depend upon the colour of surrounding objects. This fact we have often noticed, and with the exception of the somewhat ridiculous opinions of Linnæus, Hasselquist, and Kircher, most of the authors we have quoted, either distinctly state, or from their observations on this subject entitle us to infer, that the lungs are the principal agents in the production of the change of colour, their action being apparently modified by the temperature of the air—light—passions or affections of the mind—state of health—various wants—and perhaps other unknown causes.

Edin. Phil. Jour.

THE BLACK SWAN.

When the classical writers of antiquity spoke of the Black Swan as a proverbial rarity, so improbable as almost to be deemed impossible, little did they imagine that in these latter days a region would be discovered, nearly equal in extent to the Roman empire even at the proudest period of its greatness, in which their "rara avis" would be found in as great abundance as the common wild Swan upon the lakes of Europe. Such, however, has been one of the least singular among the many strange and unexpected results of the discovery of the great southern continent of New Holland.

The Black Swans are found as well in Van Diemen's Land as in New South Wales and on the western coast of New Holland. They are generally seen in flocks of eight or nine together, floating on a lake; and when disturbed, flying off like wild geese in a direct line one after the other. They are said to be extremely shy, so as to render it difficult to approach within gunshot of them.—*Menag. Zool. Soc.*

PELICAN.

ROUGH BILLED PELICAN.

PELECANUS ERYTHRORYNCHOS.

[Plate VI.]

P. erythrorynchos. Gmel. i. 571. No. 15.—*P. trachyrynchos.* Latham. index, 884. Phil. Trans. vol. 54, 419.—*Rough billed Pelican.* Lath. Synops. 6. p. 586. Philadelphia Museum.

The Pelicans belong to the family of Totipalmes, Cuv. which are distinguished by having their hind toe united to the others by a continuous membrane, notwithstanding which organization, they are almost the only web footed birds which perch on trees. They almost all fly well, and have short legs.

This genus, as instituted by Linnæus, comprehended all of the palmated tribe, the base of whose bills are in a greater or less degree destitute of feathers, and having the nostrils placed in a groove running along the sides of the upper mandible, with their aperture so small as scarcely to be distinguished; and also, having a more or less dilated gullet, and a very small tongue. Under this definition were included the Pelicans proper, the cormorants, gannets, &c. The observations of more recent naturalists, however, have shown the necessity of separating these birds into several distinct genera, restricting that of *Pelecanus* to such as are possessed of the following characteristics: "Bill very long, broad, stout, straight, much depressed; upper mandible convex at base, then plane, seamed on each side, ridge distinct, ending in a compressed, robust, and strongly hooked nail; lower broader, formed of two flexible cartilaginous branches united at tip, supporting a naked membrane, capable of forming by distention a pouch of great size, extending beyond the throat; edges of the upper mandible, plane internally, separated from the palate by two longitudinal, approximated, sharp processes; palate carinated, lower edges sharp; nostrils in the furrow, basal, linear, longitudinal, hardly distinguishable; tongue cartilaginous, very small, obtuse and arcuated at tip. Head moderate, face and cheeks naked; eyes rather large; neck long, stoutish; body massive. Feet nearly central, short, robust; tibia naked below; tarsi shorter than the second toe, stout, naked; middle toe longest, one-third longer than the outer; hind toe shortest, hardly half as long as the middle one; connecting membrane broad, full, entire; nails falculate; the middle one with its edges entire, or pectinated. Wings moderate, ample; second primary longest; secondaries reaching to the primaries. Tail rounded of twenty feathers."*

The female is very similar in appearance to the male, but the young differs greatly for a long time. They moult annually, and have a short, thick, and close plumage.

The most remarkable peculiarity of these birds, is the bag or pouch attached to the lower mandible. This bag, when empty, the bird has the power of contracting into a very small compass, and of wrinkling it up until it scarcely hangs below the bill, though when fully extended, it is of an enormous size; it may be considered as its crop, as it serves all the purposes of that receptacle, and from being placed at the commencement, instead of the termination of the gullet, it enables them to retain food in it for a considerable time, without becoming altered. When in pursuit of prey, the Pelican stows its spoils in this pouch, and when it is full, retires to the shore to devour the fruits of its industry at leisure. In this manner also, the female carries food for her young, and when disgorging it, presses the bottom of the sac upon her breast, and thus discharges its contents. This mode of procedure has, in all probability, given rise to the poetic fable of her opening her breast, and feeding her young on her own blood.

> And like the kind life rendering Pelican,
> Refresh them with my blood.*

Except this opinion of the ancients was founded on the circumstance we have alluded to, we cannot comprehend how they should have attributed to this stupid bird, the admirable qualities and maternal affections for which it was celebrated among them. When the membrane of which this pouch is composed is carefully prepared, it becomes as soft as silk, and is sometimes embroidered for work bags or purses. It is also used for tobacco pouches and shot bags, and among the negroes in the West Indies, it is thought that slippers formed from it are an infallible remedy against the gout; as well as convulsions in children.

These birds are said to be torpid and inactive to the last degree, so that nothing can exceed their indolence but their gluttony, and the powerful stimulus of hunger is necessary to excite them to exertion. They, however, fly well, and can remain on the wing for a long time, hovering over the surface of the sea at a considerable height, until they perceive a fish near the surface, when they dart down with great swiftness, and seldom fail in seizing it. They all swim with equal celerity, and dive with adroitness. It is also said by some authors,† that these birds unite in flocks for the purpose of taking their prey, forming a circle, and swimming towards its centre. When they have contracted the space sufficiently, at a certain signal they all strike the water with their wings, thus frightening the fish to such a degree, that they fall an easy prey to their insatiable pursuers. These manœuvres take place during the

* C. L. Buonaparte. Synop. Birds of the U. S.

* Hamlet. Act 4. Sc. 5. † Descourtilz Voyages, d'un naturaliste, t. ii. p. 241.

morning and evening, as at these times the fish approach the surface of the water.

At night, when their labours are over, and they have become glutted with food, they retire some distance from the shore, and remain perched on trees till the next day calls for a renewal of their exertions. Here also they repose during most part of the day, sitting in a solemn and awkward posture, looking as if they were half asleep. Their attitude is with the head resting upon the pouch, and this closely applied to the breast. Thus they spend their life between sleeping and eating, never breaking their repose till the calls of hunger render it indispensably necessary to fill their magazine for a fresh meal. Although their usual and favourite food is fish, when this fails them, they satisfy their appetites with reptiles and small quadrupeds.

The female lays from two to four eggs; some species breeding on rocks near the water, making large deep nests, lined with soft weeds, others constructing them in mangrove and other trees overhanging the water. They are affectionate parents, although, from their natural timidity, they make but little resistance when robbed of their offspring. The young, when excluded from the shell, are fed with fish that have been macerated for some time in the pouch of the mother.

These birds are easily tamed, but they are useless and disagreeable domestics, as their insatiable gluttony renders it difficult to supply them with a sufficiency of food, and their flesh is so unsavoury and rank, as never to be eaten except from dire necessity; it is probable, however, that they might be trained for the purposes of fishing, in the same manner as the cormorant; indeed, one writer assures us that he saw a Pelican in South America, that was under such command, as to go off in the morning and return before night, with its pouch distended with prey, part of which it was made to disgorge, and the remainder it was permitted to retain as a reward. Clavigero, in his History of Mexico, also states, that the Indians, in order to procure a supply of fish without any trouble, break the wings of a live Pelican, and after tying the bird to a tree, conceal themselves near the place; the screams of the suffering bird attract other Pelicans to the place, who, he says, throw up a portion of the provisions from their pouch for their imprisoned companion; as soon as the savages perceive this to be done, they rush to the spot, and after leaving a little for the bird, carry off the remainder.

According to Faber, this bird is not destitute of other qualifications. One was kept in the collection of the Duke of Bavaria above forty years, which seemed to be possessed of extraordinary sagacity. It was very fond of being in the company of mankind, and appeared extravagantly attached to musical sounds; if any one played on an instrument, it would stand perfectly still, turn its ear towards the sounds, and with its head stretched out seem to experience great pleasure.

The Pelican attains great longevity: Gesner relates that the emperor Maximilian had a tame one that lived above eighty years, and always attended his army on their march. Aldrovandus also mentions one of these birds, which was kept at Mechlin, and was supposed to be fifty years old.

Pelicans are found in the warm and temperate regions of the globe, and are generally to be seen in large flocks; in some places they are exceedingly numerous; thus, travellers assert that the lakes of India and Egypt, and the rivers Nile and Stryman, when viewed from the mountains, appear white with the vast flocks of these birds that continually cover their surface.

These birds were early observed by mankind, for we find them classed among those which were forbidden as food to the Israelites as unclean, and are also alluded to in the Psalms. It is difficult to determine whether the bird spoken of by Aristotle, under the name of Πελεκαν,* is really the Pelican of modern writers or not, though this seems to be the opinion of the French Academy. He says, that this bird frequents the banks of rivers, and swallows large quantities of shell fish, which, after having macerated in a pouch or crop which precedes its stomach, disgorges them to feed on the flesh, the heat having forced them to open. Cicero, in his treatise on the nature of the gods, repeats this observation of the Greek naturalist, but calls the bird *Platalea*, whilst Pliny gives it the name of *Platea*. Buffon, in admitting that Aristotle had reference to the Pelican, also observes, that his description of its habits does not agree with those of our bird, being rather applicable to the spoonbill. Pliny, however, does not confound them, for, after describing the Platea, he gives a very good account of the Pelican under the name of *Onocratalus*,† at the same time, it should be noticed that both Cicero and Pliny, in speaking of the Platea, differ from Aristotle, in saying that the shell fish are received into the stomach of the bird, whilst the latter, as we have already stated, observes that they are macerated in a pouch which precedes the true stomach.

There is also considerable difficulty in determining the species of this genus, some authors multiplying them to a great extent, whilst others restrict them to two or three. Thus Cuvier says there is no difference between the common Pelican, (*P. onocratalus*,) and the *P. roseus*, of which Sonnerat states, that the *manillensis* is the young. This has arisen in a great measure from the variations produced by age not having been sufficiently observed. It may also arise from individuals of the same species, living

* Book ix. chap. 10. † Book x. chap. 66.

in different countries, and hence not subjected to the same physical circumstances. This, it is well known, will not only induce variations in colour, and size, but even in the form and development of certain parts. At the same time that we allow this, we agree with Mr. Swainson, that too much latitude has been given to the meaning of the word variety, so that in its general acceptation, its definition becomes impossible; its true meaning is, an animal or other production of nature, possessing one or more characters which are changeable and uncertain, and which, consequently, will not serve as indications by which it may infallibly be distinguished from all others.

For the following account of the Rough billed Pelican, we are indebted to Mr. T. Peale, whose well earned reputation in natural history, requires no eulogy from us.

The bird is entirely white, with the exception of the primaries and nine first secondaries, which are black, as are likewise the next six, except on their external edge; crest, plumes of the breast and lesser wing coverts, with a faint tinge of yellow. Plumes of the crest silky, and about four inches in length; those of the neck very soft and pointed. Tertials, coverts, and feathers of the breast and belly, long and silky. Bill flesh coloured; pouch, orbits, legs, and feet, orange yellow; a blackish spot on the pouch near the extremity of the bill, which assumes the appearance of interrupted lines when this part is distended. Tail rounded, consisting of twenty-two feathers, (in a specimen from the Missouri, there were twenty-four.) All the specimens we have seen were destitute of the black spot on the bill, mentioned by Latham. Spurious wings, black; first and fifth primaries equal, three intermediate feathers also equal, but longer than the first and fifth; shafts white, those of the secondaries black. Iris, dark brown. The dimensions of a fine specimen were, length, five feet two and a half inches; extent, seven feet nine and three quarter inches; bill, fifteen and a quarter inches; tarsus, four and a quarter; height of rugosity on bill, two inches; weight, thirty pounds.

To such of our readers as have visited the estuaries of the Florida coast, the demure and awkward attitude of this bird must be perfectly familiar. In that portion of our country, this species occurs in large flocks, but they are also often to be seen along the shores of the Mississippi and Missouri, imparting a peculiar character to the otherwise solitary scene, their solemn and quiet demeanor being in strict unison with the stillness of the uninhabited plains which surround them. They do not, however, remain throughout the whole year on our western waters, migrating to the south during the autumn months, and returning early in the spring. Specimens have been killed at Council Bluffs as early as the 8th of April, some of which were of great size, the pouch of one obtained by Mr. Peale, being capable of containing upwards of four gallons of water, although when empty, such was its elasticity, that it hung but a few inches below the bill.

The individual from which our drawing was made, was shot, with its companion, a few miles below Philadelphia, and presented to the Museum by Mr. P. Brandt. These birds very seldom occur so far north on the Atlantic coast, the only other instance with which we are acquainted, were a pair which were killed in New York harbour a few years since. Latham, however, mentions that they are found in Hudson's bay. On the western rivers they may be seen as high as the 42d degree.

They build in societies, and seldom are found except in flocks. On the mangrove islands in Musquito river, East Florida, both the present species and the brown (*P. fuscus,*) breed in vast numbers, but always select separate islands. Mr. Peale visited some of these spots during the winter, and although not the breeding season, found that they still collected in great numbers every night, for the purpose of roosting, apparently arriving from great distances, and evincing strong attachment to the place of their birth. The mangroves were covered with the remains of old nests; these were principally composed of sticks, and several nests were to be seen in the same tree, generally at about eight to ten feet from the ground. We have no precise information as to the eggs, but believe that they are two in number, and of a white colour. In the months of June and July, the inhabitants of the surrounding country collect great numbers of the young birds, before they are able to fly, for the sake of the oil they afford; this is said to burn freely, and to furnish a clear light. When flocks of these birds are disturbed they rise in much confusion, but soon form in regular order, usually flying in long lines, though sometimes in a triangle like geese, with their long bills resting on their breasts, in the manner represented in our plate.

C. L. Buonaparte has confounded this bird with the *fuscus*, from which, however, it appears to be very distinct, both in appearance and habits. The adult bird of the brown Pelican is blackish-ash, back and wings hoary; crown yellowish; neck deep chesnut, margined on each side with white. Middle nail serrated internally. In the species under consideration, the whole plumage is white, with the exceptions we have already noticed. The nail of the middle toe is smooth. In fact we should be more inclined to consider it as a variety of the *onocrotalus* than of the *fuscus*. But it differs from both these in its habits. The latter soar over the water and take their prey by plunging, whilst the Rough billed obtains its food in swimming, scooping up mullets and other fish as with a net; it also occurs along rivers far in the interior, the other species being almost exclusively confined to the coast.

SKATING.

The present winter has afforded ample opportunity for indulgence in this delightful exercise. The Delaware has been fast bound for nearly a month, with a clear and extensive sheet of ice, upon which many of our citizens have displayed their skill in the art. Skating is both a manly and innocent amusement: it recommends itself in such a variety of pleasing shapes as to be diligently pursued by the young, and much talked of by the old: its reminescenses are of a character every way agreeable to the mind, and gratifying to the heart, and it may well be ranked among the noblest of pastimes.

The art of Skating is of comparatively modern introduction. It can only be traced to Holland, and seems to have been entirely unknown to the ancients. Some traces of the exercise in England, are to be found in the thirteenth century, at which period, according to Fitz-Steven, it was customary, in the winter when the ice would bear them, for the citizens of London to fasten the leg bones of animals under the soles of their feet, and then by poles push themselves along upon the ice. The wooden skates shod with iron or steel, were brought into England from the low countries. With the Hollanders, Skating is more a matter of business than pleasure, for it is said, that the produce of their farms is carried upon the heads of their men and women, to the towns and cities upon the borders of the canals, there to be sold, and articles of convenience and luxury purchased, and taken back in like manner to the country. Less attention is therefore paid by them to graceful and elegant movements, than to the acquirement of that speed which is necessary to what is termed journey skating, as long and rapid excursions are frequently made upon the ice, when the streams, natural and artificial, by which their country is intersected, are frozen over.

Great improvement in the style of Skating has taken place within a few years past, and various figures practised to which the earliest Skaters were strangers. The forward and backward movements, commonly, but, as it is thought, improperly, called High Dutch, show more ease and grace than any others within the range of the Skates; they require very little exertion, and if rightly performed, carry the Skater over the ice with amazing rapidity. In the former, the lower limbs should not be permitted to stride much—the swinging foot should always be brought down nearly parallel with the other, when about to receive the weight of the body, and at the same time, the body should incline to that side a little to the front, making an angle of about seventy degrees; in this position, the foot having hold of the ice will aid the inclination of the body in making a bold and lengthy curve, as also, a handsome sweeping motion. In the latter, or backward High Dutch, the swinging limb must always act as a balance to the body, and by it a perfect command of the necessary motions acquired; the limb should move in a line with the body kept nearly straight, and the toes pointed downward. In all forward, circular, and sweeping movements, the body should be kept as erect as possible, and stooping of the neck, head, and shoulders avoided. The Skater should never look at his feet, and seldom throw out his arms.

In graceful Skating, very little muscular exertion is required. The impelling motion should proceed from the mechanical impulse of the body thrown into such a position as to regulate the stroke. Chasing, running, and jumping, tend to give an imperfect idea of the art, and produce habits that are excessively difficult to break. Both feet should be

used alike—when a movement is performed by the one, it should be tried by the other. Too much Skating on the inside of the Skate prevents the acquirement of the more beautiful part of the art, resulting from the frequent and alternate use of the outer edge of each iron. Skating on the outer edge, being the most graceful action, is the most difficult to perform, and requires much practice and great skill. The beautiful attitudes in which the body may be placed where the Skater has a perfect command of his balance, will amply repay him for any care he may have bestowed on the acquirement of this most fascinating part of the exercise. It is scarcely possible, however, to reduce the art to any thing like a system. The best way to acquire a knowledge of it, is to begin when young, and select some good Skater as a pattern.

Although it is asserted, by some modern writers, that the metropolis of Scotland has produced more instances of elegant Skaters, than any other city whatever, the opinion seems to be, that Philadelphia, in this particular, stands unrivalled. The frequent facilities offered by the freezing of her noble rivers, must be borne in mind. There is scarcely a winter, in which Skating is not practised by a large portion of her population for weeks together, and the climate is of so fluctuating a character, as to prevent any very long interruption of the amusement during the cold season. Many gentlemen, well known to the community, have displayed considerable skill, and uncommon grace in the art, and caused this interesting pastime to be generally noticed. It is recommended by its excellent effects upon the body and mind, and perhaps, of all the amusements resorted to, is productive of the least inconvenience, and may be enjoyed at trifling risk. Accidents upon the ice are rare; they are generally the result of great carelessness, and in Skating, are not more to be dreaded than those met with in the common amusements of youth.

An entire abandonment of the old fashioned Skates, commonly known by the name of gutters, dumps, rockers, &c. is strongly recommended. A proper Skate iron, is in shape very much like the runner of a sleigh, the curvature in it being very slight. The American Skates, after an improved plan, are now manufactured by Mr. Thomas W. Newton, No. 60 Dock street, and will, in the course of time, come into general use, and entirely supersede the foreign article. They are formed altogether of iron, the foot piece being a thin plate of that metal, and the runner fastened to it, by having several projecting points passing through holes drilled in the foot piece, and rivetted, forming a strong and immovable union, a point in which the common kind is very deficient.

The principal advantages consist in the breadth of the foot plate, and the foot being brought *much nearer the ice.* The plate being made right and left, gives the entire breadth of the sole of the boot. It is also a little hollowed and turned upwards in front, fitting the shape of the sole exactly, and so pleasantly, that a slight strapping suffices to hold it firm. Instead of being strapped from toe to heel, as in the common way, the strap forms a bracing *across the foot,* with four attachments on each side. The pressure is thus so equalized as to make it very comfortable; upon taking off these Skates, after hours of use, no cramping of the foot is felt; the great advantage in having so many bearings of the straps is, that the pressure of the large and continually moving tendons of the instep is avoided.

The runners are brought up in front till they turn over and touch the top of the foot, and being rounded on the edges and highly burnished, the appearance is light and handsome; this form is not given merely to please the eye, for if every Skater used this shape, those accidents which sometimes happen by two persons hooking the points of their Skates together, would never occur. The best improvement, lately discovered, consists in making the runner the entire length of the foot, letting it come back to the extremity of the heel.

That great desideratum, the firm fixture of the Skate to the heel, has, by a very simple plan, been perfected in the new kind; it is a small ketch at the extreme end of the heel, which is with great facility attached to a screw head that is fixed and ramains in the boot heel.

The iron soled Skate is not a new invention; it was used in the family of the late Mr. Peale more than thirty years back.

In the compilation of this article, we are indebted to one or two friends, adepts in the art of Skating, for their ideas upon the subject, and have also derived some assistance from a piece under that head, to be found in Nicholson's Encyclopedia. Should what we have written tend to bring this delightful pastime into general practice in the winter season, we shall be more than repaid for any little trouble its preparation may have occasioned. P.

R

STRICTURE ON I. T. S.

Messrs. Editors,

In the second number of your interesting work, a correspondent has presented your readers with an entertaining and lengthy account of "Chesapeake Duck Shooting." I read it with considerable pleasure, as well from the faithfulness of his description, as from a natural fondness I have for sporting, or for any thing that has a tendency to keep alive its spirit; in giving his ideas, however, of shooting, so far as relates to directing the gun in advance of the duck

to overcome the rapidity of its flight, I beg leave to differ, and, in doing so, I am well aware I oppose myself to the practice of many a *good shot*, whom custom and prejudice have confirmed in old habits. There are many ways, nevertheless of accomplishing the same end—what one would adopt, another rejects—and, after much experience, strengthened by the observations of others, I have found that more depends on quickness of eye in covering the bird, and a simultaneous touch of the trigger, than in any rule, as to distance, laid down by your correspondent. The great mistake with many, which leads them to adopt your correspondent's mode, is, that at the time of pulling the trigger, they stop the swing of the gun, and thus shoot behind the bird, whilst if the swing of the gun was kept up in a ratio corresponding with the flight of the bird, and trigger pulled when fairly covered, the result would ever be found effective, if within killing distance. When flint-guns were in general use, the necessity of shooting in advance was more obvious, as often times a considerable interval elapsed from the pull of trigger to the discharge of the gun; but, since the introduction of the percussion principle, the discharge and effect are so simultaneous, that a good eye and obedient hand are now only necessary.

With regard to the effect of shot, when "heard to strike," I would also take the liberty of dissenting; the very circumstance of the shot being heard to strike, is convincing to my mind of a want of sufficient force to penetrate. This may be illustrated by discharging the contents of a shot-gun against a board fence, at a moderate distance: if the striking of the shot can be heard, it will be found on examination of the fence, that their force has been ineffectual: but if, on the other hand, the action of the shot has been silent, their power will be evidenced by the fact of their penetration, in every part of the wood: it is the resistance of the shot by the object, that causes their action to be heard, and in no instance will they be found to be fatal, when this is the case.

By giving the foregoing observations a place in the Cabinet, you will oblige a

Jan. 31, 1831. SPORTSMAN.

AN EXTRAORDINARY WOLF HUNT.

In the winter of 1815, I was called on with Capt. W—— by a neighbour, who had, the evening previous, seven sheep killed, by a Wolf, to assist him in the destruction of this animal.

We were then residents of the village Deposit, in the county of Delaware, state of New York, about one hundred and fifty miles north of Philadelphia, and near the Pennsylvania line, and having the character of sportsmen, we were often called upon for like excursions, and priding ourselves as such, we never suffered any huntsmen of our neighbourhood to excel us in the chase, nor to take the lead when it depended on our individual exertions, having assisted in the destruction of many bears, wolves, and panthers, we were well known through the whole county, which was ninety miles in length.

In engaging in the above enterprise, we were aware that we had difficulties to encounter of no ordinary cast, and knowing that many of our most experienced huntsmen had been in pursuit of this same Wolf repeatedly, without success, we were ambitious to excel, and, accordingly, entered into our engagement, with a determination to kill him.

It is worthy of remark, that this Wolf was well known through the whole county for ten or twelve years, from the circumstance of having lost three toes off his left fore foot, by a steel trap, consequently, his track being different from those of other wolves, he commonly went by the name of the "*three-legged Wolf.*" The depredations committed by this animal were wonderful, as there was scarcely a farm-house in the county that he had not visited, and made havoc among their sheep, frequently destroying fourteen in a single night; every thing which could be devised for his destruction, was employed, but proved fruitless; he had grown wise by experience, so that he avoided every thing likely to entrap him, and had become so familiar with the chase, as to elude his pursuers with the greatest ease. About three weeks previous to our chase, this Wolf entered the premises of Judge Pine, at Walton, and killed for him nine sheep in one night; word was sent down at that time with an invitation for us to join them that day in order to destroy him. But knowing there were many professed hunters in that place, we sent word by the express, that "they must guard their own sheep, and if he came to us we would guard ours." Accordingly, three of their ablest hunters went in pursuit of him, and after a circuitous chase of three days, gave it up, and left him within ten miles of the place where they first started, and the very night after, the Wolf killed three sheep for one of the men who was chasing him the previous day; this circumstance discouraged them, and they relinquished the chase altogether. It is well known amongst hunters, that a Wolf can withstand the utmost fatigue when he can find means to satisfy his hunger, and no human power can tire him down, but keep a Wolf constantly on the run, and out of the reach of food, he soon tires, because, being of exceeding ravenous disposition, his hunger returns quickly, and the means of satisfying being kept out of his reach, he will grow weaker and more weak, until they will give up with exhaustion;

thus, this Wolf having had a hearty repast, the third night, his pursuers knew it would be fruitless to give him further chase, and therefore gave it up.

It was not long, however, before this depredator paid us a visit, and destroyed, as beforementioned, seven sheep for the farmer that had requested us to join in the pursuit of him.

We had never heard of a Wolf being run down with fatigue and starvation, but our acquaintance with the animal convinced us of the practicability of the thing, and knowing this was the only probable chance we had to exterminate him, we agreed to follow him until this was the case, or an opportunity offered during the chase of shooting him with our rifles.

When the request was made to me by our neighbour, Capt. W—— who was standing near, asked me what I thought of it? I replied, "he must die, or our word will be forfeited." "Well," says he, "let us fly to arms, but then, again, let us be satisfied that it is the 'three-legged Wolf.'" We went to the place where he had destroyed the sheep, and found to our satisfaction, that it was the old depredator we had heard so much about. We, without delay, prepared ourselves for the chase; our dress consisted of a complete suit of flannel, next to the skin, and over this another suit of strong linen or tow cloth (pantaloons and frock) to fit tight, and on our feet moccasins: this was our usual hunting dress, and required to be very strong, in consequence of briars, laurel, under-brush, and snags; in our frocks we had pockets sufficiently large to carry provision for the day; thus equipped, with rifles in our hands, and dogs that would seize any wild animal, but a Wolf, we started. It was nine o'clock in the morning—there were fifteen ready to join us, and the ground was covered with a fine tracking snow, about eight inches deep. Some of the company were considered very fast runners, and those who are acquainted with the Catskill and Delaware mountains, are sensible that a horse cannot travel over them, and that every thing of the kind must be done on foot. We took the track, and followed it about three miles to the foot of a mountain; and our rule, on these occasions, was to keep a fast walk on the track until the animal jumped from his bed, and then the fleetest man was to go ahead at full speed.

We found the Wolf had gone up this mountain, which was about three miles to the summit, and very steep in places, but about two-thirds of the way up, we aroused him from his bed, this we could tell by the snow that he had beaten down to repose on. We ascended the mountain as fast as we could, and, on arriving at the top, discovered that he had steered his course towards the Susquehannah. I then started off at full speed, and continued so for about two miles, when I looked behind to see what progress my companions were making. W—— was close to me, but the others were just in sight—says he, "go on, H— if he keeps this course, about five miles ahead he will cross a large field, and if we run faster than he has previously been chased, we may surprise, and get a shot at him." I immediately recollected the field, and coincided with his reasoning. About one mile behind this field, we feared he would cross the Cooquago Creek, ascend a mountain, and enter a large windfall,* that was on the top of the mountain, as it is the case with most wild animals, when hard pressed, they will avail themselves of these difficult places to escape, and bears, wolves, or panthers, will glide through them with ease, when it is almost impossible for man. I therefore exerted myself to the uttermost, and, although the ground was covered with hemlock logs, &c. I did not heed them, but sprang over them with ease, I ran these five miles in a very short period, and as I approached the field, I saw the Wolf about three hundred and fifty yards ahead, and finding that I could get no nigher to him, I levelled my rifle and fired, I saw the snow fly close to his side, but he went off unhurt. My rifle would drop her ball, in that distance, nearly three feet, consequently, I had to guess the proper range. In a moment, Capt. W— was by my side, and asked what I had done? I told him that I had not struck him. We continued our chase, and I loaded as I ran, and only stopped to put down the ball.

It appears that this Wolf knew, by experience, (having been so often chased) how far exactly to keep ahead of his pursuers; but it was evident in these five miles we gained on and surprised him, for he was not fully aware of our nearing him until my rifle ball struck within a foot of his side; this put him to a greater speed, and I did not recover my lost ground until I had run ten miles, so equal did we run, and part of the distance was run through the windfall spoken of. He kept his course to within a few miles of the Susquehannah river, and then turned towards the west Branch of the Delaware, and ascended a mountain which was covered with hemlock and laurel. The last four hours we run him so hard, that he would lie down every opportunity he could get, and this laurel hill afforded him means of rest, for it was so thick we could hardly creep through it. In this place he took several turns to elude our pursuit, and one of us went back in order to way-lay him, in hopes that he would give an opportunity to shoot him, but the thicket being so dense, that we could see but a very short distance in it, and the Wolf glided out on the opposite side

* A windfall is a place in the forest, where a hurricane has passed, and swept the trees to the ground, in a large confused mass, and mostly occurs on the tops of mountains, and in the most dense thickets.

and was off again. In this way he got considerable rest, and would gain on us, but when he crossed from one mountain to another, we always pushed him hard, and would gain on him, as the mountain sides were generally more open, and even then he would occasionally rest, but would always choose some point or hillock, where he, being elevated, could see us without our seeing him. A Wolf, like a dog, always turns round once or twice before he lies down, but this *fellow* had become so fatigued that he would just drop himself every now and then, and again be off. He next made a bold push in order to reach another windfall and thicket about ten miles ahead, which, it appeared, he was well acquainted with, and which was close to the road that run from the town of Bainbridge to Deposit.—The sun now was but one hour high, and as he laid his course towards that place, through a clear open wood, on a regular descent, we pressed him hard for about five miles, when we again saw him about four hundred yards from us, he saw us at the same time, and then he attempted to turn back again, so that he might reach the thicket which he had just left. I, however, cut him off, and he, seeing my manœuvre, kept his former course—we began to think that he must be our's very soon, for we gained on him so fast, that I concluded it time to give him another ball, but unfortunately he entered a thicket of beech brush of about two acres, which completely shielded him from my view. On coming up we found he had slipped out on the opposite side, and then made off for the beforementioned windfall. It was now getting dark, and we made for the public road, which we soon reached, and to our joy heard bells, which we at once recognized as coming from a sleigh owned by Capt. Edicks; we fired off our rifles, in order that this gentleman might know our direction. He was one of the company who started with us in the morning, but gave out, and knowing the direction the Wolf had taken, went home, procured his sleigh, and came out very seasonably to meet us, as we were then fifteen miles from home. Our dogs were of the best kind, and would follow us while they had life, but we had outrun them so much, that we had to wait a long time before they came up to us. It is remarkable, that these dogs would never touch the Wolf, they would join in and run with, but never injure him. We arrived at home about 9 o'clock, and found that W— and myself had been forsaken by all of the hunters, about the time when I fired at the Wolf crossing the field; they being so far behind us as scarcely to hear the rifle, gave up the idea of overtaking us, and returned home. By this time the report had gone abroad that we were in pursuit of the "three-legged Wolf," and old and young appeared full of animation to join us in the hunt next day. We took great care in preparing ourselves for the next day's chase, in dress, victuals, and drink; we ate but lightly, and drank nothing but a little wine, and bathed our limbs well with brandy, previous to retiring to bed, and thus removed all stiffness and bruises which we had received through the day.

Before the dawn of the next day, a company had assembled to the number of forty persons, fifteen of whom had agreed to enter the chase; the rest took horses and went in all directions, with a view to cut the Wolf off. In this county there were but few public roads, but a great number called log roads, cut through the forest in order to carry logs to the river for rafting; into these roads were stationed many persons on horseback and in sleighs, while the party on chase went immediately to the spot where the Wolf was left the night previous. On arriving here, we found that he had lied down and remained the greater part of the night within four hundred yards of the place where we left him, then it appears he walked off about two miles and fell in with a herd of Wolves, and kept with them about three miles further; then tacked about and steered his course back to within two miles of the village (Deposit) from which we had just set out, and near to the very place where he had killed the seven sheep the night before. It was a remarkable circumstance with this Wolf that he was never known to associate with other Wolves, and when he committed depredations it was always when alone; for Wolves seldom ever attack singly, but most generally in pairs, and it never could be satisfactorily accounted for why this depredator had no companions, unless it was, that it had been by such that he was led into a trap, which had cost him his toes, and nearly his life; hence the reason of his quitting the herd above spoken of. It was now late in the day, and we had gone out fifteen miles, and returned thirteen, before we *jumped* him from his bed, and as soon as this was the case, the swiftest hunter took the lead, but it was some time before we got into regular Indian file, and the woods seemed alive with men; but, after running about five miles, the fresh hands began to fall back, and by the time we reached ten miles, I looked behind, and [illegible] only W—, who was within ten steps of me. As this was the first time that we had an opportunity of competing with some neighbouring *crack* hunters, and these having relinquished the chase, we plainly saw that the destruction of the Wolf depended solely on our own exertions; this circumstance, instead of discouraging, only animated us to persevere. The Wolf next steered his course for the upper part of the county, and we pressed him at a rapid pace; one tried to excel the other, and I could generally take the lead of my companion in the morning, but his exceeding perseverance and good bottom, generally brought him ahead of me before night, and as a passing tribute to his prowess, I must say, that I never saw his equal, as a huntsman; there was no difficulty

too great for him to overcome, no danger so formidable but he would face it, and he was as fearless of the consequences of attacking the most ferocious animals, as though they were but sheep; and hence, in the present difficult undertaking, he never uttered a discouraging word, and so intent was he on the destruction of this Wolf, that no reward would have made him relinquish the chase.

We were satisfied that this animal was so tired, that he could not travel at night in search of food, especially as he was leading off from the places of his former depredations towards the Susquehannah, and it was evident, by the repeated beds he made in the snow, where he had thrown himself down for momentary repose, that he could not sustain the chase much longer, he however soon changed his course, and turned in the direction of the river Delaware again.

The way before us now, was down the mountain's side, through a clear, open woods, on a regular descent as far as the eye could reach, and at least twelve miles; my regular jumps were about eight feet; after running this distance, I saw the Wolf, just as I approached another hill, but too far from me to do execution, and had there been two miles more of this open wood, he certainly would have fallen a victim to our rifles.

But ascending the hill he gained on us, and being sensible that our footsteps were retarded, he would drop himself in the snow every few paces, and get some rest. On the hill he entered another windfall, around which he took several turns, and although we waylaid him again, yet he slipped off and made for a thicket about three miles further on. He was but a short distance from us, and W— and myself pressed on with greater speed, in order, if possible, to overtake him before he could reach this thicket, but in spite of all our efforts he succeeded without our once seeing him. W— then took the lead, and says he, "if we can but get him out of this thicket before dark, he is a dead Wolf, but we must crowd him hard before night." Before us lay a large mountain, which we knew bordered on the river Delaware, and close to a small place called Dickinson's city, and which consisted of four log houses, having derived its name from some early settlers; this was twelve miles distant from our village Deposit. The Wolf run this thicket for two miles and crossed a creek called Trout brook, then the road which leads to Walton, and went up the aforesaid mountain; when we came to the road we met Mr. Mossman, who informed us that he saw the Wolf pass just before him, and ascend the mountain, and that he was but two minutes ahead of us. It being so dark, we gave up the chase for the day, and went down to Dickinson city. Here, at a public house kept by Jesse Gilbert, we received a very comfortable repast, indeed, exceeding our expectations. About five miles from this place, lived one Derrick Brewer, and much celebrated as a great runner, and huntsman; him, therefore, we determined to have, if possible, to join us for the next day's hunt; we, accordingly, gave a man a handsome reward, and despatched him express after Brewer, with a request for him to meet us at Dickinson before day light: we then retired to rest, and arose before dawn of day much refreshed, and with better feelings, but somewhat sorer than the day previous. Brewer was ready, and after we eat a slight breakfast, (in which B. refused to join us) we started. It appears that this hunter would lace himself with a belt, and never eat until about nine o'clock, while we would not clog nature, and eat continually, but very slightly, which kept up a constant stimulus in our systems, as we always carried biscuit or dee-nuts with us, sufficient to last the day. Seeing the manner Brewer treated himself, W— says to him, "you must not take it amiss that if you do not eat breakfast, I tell you, you will not be able to keep up with us." "Well," says Brewer, "two o'clock will decide that." By the time it was fairly light, we were at the spot where we had left him the night previous, and we had not proceeded more than three hundred yards up the hill, before we found his bed; this he had left of his own accord, and walked to the top of the hill, which was about a mile and a half to the summit, and then took to another road which led direct to Walton, and continued until he came close to Judge Pines' farm, a distance of fifteen miles, where he had a few weeks previous killed so many sheep, and there at the foot of another hill he had reposed for the remainder of the night. We soon aroused him, and he took directly up this hill, which was exceedingly steep, but up which we clambered, with slow progress, until we gained the top. We had walked fifteen miles, and as I was first on the summit of the hill, I looked down and saw W— about thirty yards from me, and Brewer fifty behind him. The Wolf kept his course on the brow of that hill for three miles, and then left it and crossed the road which leads from Walton to Franklin, on the Susquehannah, here I stopped and waited for my companions. W— was immediately by my side, but Brewer, on whom we depended so much, came up puffing and blowing; Says W—, "he is out of breath, his lacing wont do, he must give nature its bounds." The wood before us was open for six miles, and gradually ascending, but not so much as to prevent our taking rapid strides; as I neared the top I slacked for W— to come up, but Brewer was not in sight, and we expected he had given up and returned home. "Now," says W—, "if the Wolf keeps this course, we will have a regular descent for nine miles." I then started at full speed, guarding always against jumping into holes, (in which case, probably, my legs would have been broken,) until I came within

two miles of the foot of the hill, when I saw the rascal about three hundred yards ahead, and he saw me at the same time. We now had it as hard as we could lay to, and I saw that I gained on him but slowly, and being within one hundred and seventy-five yards of him, I fired just as he was quartering on me, but he kept his course, and rose a high mountain immediately before us. I re-loaded, and proceeded on, and found that he had dropped in the snow so often, as to evince the greatest fatigue, and nothing but his very life stimulated him on. On this mountain were many windfalls, and other difficult places, almost impassable for man, and had we been in chase of any other animal but the "three-legged Wolf," the number of difficulties at this time would have disheartened us, but we were intent on victory, and our infatuation blinded us to difficulties, and made us callous to suffering. Brewer did not hear my rifle, but it appears that he persevered until he came to the spot just described, when he gave up and went home, and told the neighbours that he was certain that W— and myself would kill the Wolf before, as we had nearly killed him behind us. Our antagonist kept his course on this hill for seven miles, but it being covered with underbrush, we could not gain on him: the sun was gliding behind the distant hills, and the Wolf having so much start of us, we concluded to look out for quarters to spend the night; we accordingly ascended a high point on the mountain, and in a valley two miles distant we saw a house, whither we proceeded, and were immediately recognised by a young man, an inmate of the dwelling; he inquired of us "what brought us there in our hunting dress, and with rifles." We told him we were after the "three-legged Wolf." "Ah," says he, "I know him well; I hope you will not leave him here, for only three weeks since he killed eleven sheep in one night for us, and last winter he killed eighteen others; has he not lost part of his left fore foot?" We told him we were satisfied that he knew him, as that was his description, and that we would never give him up until we destroyed him, unless a snow should fall so as to obliterate his track. This was fifty-two miles from our homes, in a direct line, and I have no doubt we ran that day sixty miles, as we were then near Delhi, in the upper part of the county.

We were treated with great hospitality by this family, whose name was Wilson, and every thing was done, to make us and our dogs comfortable, that could be devised; after drinking some tea and eating but little, we found that sleep was more desirable than any thing else, and we retired to rest. Our dogs did not reach the house for some time after our arrival, and then they were in a wretched condition; but the family exercised great humanity towards them, especially the children, who had taken them into the parlour, and were rubbing them with dry napkins. We had requested the family to prepare us breakfast, and call us before daylight, and so anxious were they to afford us every facility, that the children took turns in sitting up all night, for fear we might oversleep ourselves. When we arose, we found a repast prepared for us, with some doe-nuts to eat through the day. This, generally, was our daily food, and for drink we would catch up a handful of snow, as we ran, not allowing ourselves sufficient time to slake our thirst at a brook.

Before light we started, and tracked our way up the mountain, and I can candidly say, I never felt better than at that time; my spirits were buoyant, and I trod with lighter footstep than any day previous: this was the fourth day of our hunt. I asked Capt. W— how he felt; says he, "I feel well, victory to-day, to-day the Wolf must die." But we felt keenly for our poor dogs; for, although they had been so well nursed, yet they could not move a step scarcely, without crying; and thus they continued yelping until they had followed us some miles. We would have left them at the farm-house, but they howled so terribly, we were obliged to let them follow us. About light, we got on the Wolf's track again, and within three hundred yards found he had lied down, but had risen again in the night, voluntarily, and walked not more than ten yards, before he made another bed in the snow. It was evident his time was drawing to its close, for in the last bed he laid till we surprised him in the morning. His former plan was, after we had ceased chasing him, to run a few hundred yards, then lie down for about half of the night, and rise again, and travel off fifteen or twenty miles into the neighbourhood of his depredations, and then rest preparatory to the next nights havoc amongst sheep; but now it was pretty certain that we had tired him too much to waste any time after sheep, and that he did not possess power to travel much further.

When we aroused him this time, he led right off from home, but we cared not whither he went so that he left a track for us to follow him; but this mountain was covered with underbrush, and he appeared to be well acquainted with every inch of ground he ran over, therefore we could not push him to the extent we desired, this he was well aware of, and he would choose the most dense and difficult part of the wood, but he omitted now, making his usual circuits about the windfalls, as he had no time to spare, and would continue his course direct. We followed him with renewed speed for about seven miles, when he left the mountain, and directed his course across a valley, six miles, to another mountain: through this valley was clear open wood, and we pressed him so hard, that he began to lengthen his jumps, and made no more beds in the snow, until he

reached the above mountain, where he had opportunities again to rest, as the side on which he ran was so perpendicular that we made but slow progress. We found that he would drop himself to rest, every few steps, and just keeping so far ahead as to be out of our sight, although we were confident he saw us continually. On arriving at the top of the mountain, we found he had made a start for a thicket, on the same mountain, before we could overtake him, but the course he was going was a gradual descent for about fifteen miles, until it terminated at the foot of another mountain, which was in that range called Pine Hill, on the head waters of the west branch of the Delaware river.

I started off at full speed down this side of the mountain, making long jumps; I never felt better; and with ease to myself could run a mile in five minutes; my limbs felt invigorated, and my speed was superior to any of the former days. I continued so for nearly thirteen miles, and then came within sight of the Wolf. He was then but two hundred yards in advance of me, and he had yet two miles further to go before he could reach the mountain, and this through open wood; he used every exertion to quicken his pace, but in spite of his efforts, I gained on him. I had run but one mile since I got sight of him, and when I was within forty yards of him, he looked behind at me, and seeing no possible chance of escaping, dropped his tail between his legs, and stopped; I ran within twenty yards, and shot a ball immediately through his body—he fell, and arose again; crack went Capt. W.'s rifle, and down he dropped dead, in a moment my foot was on his neck; but we were at a loss to express our joy—we were in the midst of an extensive forest, and we knew not where; we charged our rifles, and gave four rounds in commemoration of the four days' chase. Our difficulties were not yet to an end, for we were determined to take him home, we accordingly cut a small stick, and twisted one end, fastened it to his upper jaw, and while one carried the rifles, the other dragged him on the snow. It appeared, on examining the Wolf, that I had struck him on the flank the day previous, when I fired at him, to about the depth of the ball, cutting the flesh, but not so as to retard his progress. We continued dragging him, and followed down a small branch, which, we were convinced, would either lead us to the Delaware, or Susquehannah; and, after proceeding about eight miles, came to a farm-house, occupied by a Mr. Sawyer; he soon recognized us, and seeing us dragging a Wolf, asked if we had the "three-legged Wolf?" and when we answered in the affirmative, says he, "I will hold a day of rejoicing, for I have but few sheep left from last winter, as he then killed nine, and eight of them were my best ewes, and, I suppose, he came here for more mutton.—Tell me," continued he, "what I can do for you, and it shall be done." We asked him if he would take us in his sleigh towards our home, or until we could find some of our neighbours that would take us the balance of the way. We were then eighty miles from our village of Deposit, in a direct line, and he, without hesitation, agreed to do so. The next day we arrived at Walton; here were assembled, some of our companions who had started with us on the hunt from Deposit, having heard the course the Wolf had taken, had followed us as nigh as they could guess, and this being the last place they could hear of us, they concluded to remain here. The number of persons assembled at Walton, out of curiosity, was about one hundred, to see the result of the chase, as every farmer appeared to be deeply interested in the destruction of this Wolf; and making a calculation, we found that the persons assembled there alone, had sheep destroyed by him nearly to the amount of one thousand dollars. When, therefore, they saw our success, it appeared as though they could not do too much for us; they escorted us home with fifteen sleighs (a distance of thirty miles) and our fame resounded throughout the whole county, with the benediction of "blessed is he that holdeth out to the end."

T. M. H.

PETRIFIED FOREST OF MISSOURI.

The folllowing letter, directed to Mr. Peale, of the Philadelphia Museum, has been received, with a specimen of the petrified wood, taken from the forest, and a description of this interesting change of nature attached to it; both are inserted at length, so that all doubts on the subject may be put to rest.

Greensburgh, 5th Nov. 1830.

Sir,

About eighteen months since I had received from Lieut. G. H. Crosman, of the U. S. Army, a specimen of the Petrifactions in the Forest of Missouri, with the intention of forwarding it by some convenient opportunity, to be deposited in your valuable Museum. Other engagements, however, have hitherto prevented me from carrying this intention into effect, until my attention was this morning called to the subject by an article in the National Journal, of the 30th ult., extracted from the New York Evening Post, referring to an article in the Philadelphia Chronicle.

It is evident, from the specimen now forwarded, as well as from the information received from Mr. Crosman, that it is a true petrifaction, and not merely an incrustation. The appearance would indicate a calcareous mineralizing matter; this, however, is not the fact, as proved by the application of sulphuric acid. It is evidently silicious, although I

have not taken the pains of making the experiment; although sufficiently apparent from its hardness, &c.

I enclose the article in the Journal, to which I have alluded, and will forward the specimen with this, the first convenient opportunity.

Very respectfully, your obd't servant,

A. W. FOSTER.

The following is attached to the specimen now in the Philadelphia Museum:—"Petrifaction of Wood.—This piece of petrified wood, was broken from the stump of a tree measuring fifteen feet in circumference, and about four feet in height, by actual measurement. It was found on the S. W. bank of the Missouri River, about thirty miles below the mouth of the Yellow Stone, and nearly opposite the junction of White Earth River with the Missouri, in lat. about 48° 15',"

The most remarkable facts, concerning the petrfactions of this region, are, that stumps, limbs and roots of trees of all sizes, broken into fragments, lie scattered over the country for a distance of thirty or forty miles, at an elevation above the level of the river, of at least five hundred feet, and at a point which is computed at six or seven thousand feet above the level of the Ocean.

Surgeon Gale, of the Army, who, as well as myself, was attached to the military expedition that ascended the Missouri in 1825, from Council Bluffs to Two Thousand Mile Creek, and who accompanied me on an exploring and hunting excursion, across the country, from below the mouth of White Earth River, to the Yellow Stone, assisted in examining and measuring the stumps of some of those petrified trees, and he gave it as his opinion, that from the appearance of the country, some thousand years must have elapsed since a thick forest of timber stood where now nothing remains but these petrified fragments

He was rather inclined to the opinion, that the kind of wood, was the cotton wood of the Missouri country, common enough along the banks of the Missouri river and its tributaries.

This subject furnishes abundant matter for the natural philosopher, for whose curiosity and speculation it is here submitted.

G. H. CROSMAN,

U. S. Army.

DEFENCE OF THE PERCUSSION.

The general opinion is, that shot is propelled to a greater distance and with more uniform velocity from a gun, in proportion as the force of powder exceeds the weight of shot; and it is upon this false supposition that the anti-percussionists have grounded their objections to detonating guns, by affirming, that "the explosion takes place so instantaneously that the whole of the load of powder is not ignited, and that a portion is driven out unexploded."

It is well known that the resistance which bodies meet with in passing through a fluid, increases as the square of their velocity. Therefore a load of shot, passing through the air at a given rate, would meet with four times the resistance if its speed were doubled. Hence, if one drachm of powder will carry a load of shot forty yards with a given force, the power of two drachms would, it is true, give a double velocity to the shot at its egress from the muzzle of the gun; but the resistance being now four times greater than in the former instance, the force of it at the distance of forty yards would be very much diminished.

I have shot three seasons with my present gun, which is a double-barrelled detonator. For the two first seasons I used the proportions for the load which I received from the gunmaker, and during that time I do not recollect to have killed a bird farther than forty paces. Thinking this might be improved upon, I determined to try the effect of reducing the quantity of powder; and having first loaded with the original charge (and No. 5 shot), I fired at a tin powder flask at the distance of forty measured yards, and struck it with five shots, but the marks were barely perceptible. I then reduced the quantity of powder (only) one quarter, and the shots made much deeper indentations in the tin than before. I then reduced the powder still further, to about two-thirds of the original charge, and the result answered my expectations fully: for I found five shots as firmly set in the tin as stone was ever set in gold. I measured the distance of two shots at birds: one was sixty-two paces, and the other sixty-three; in both instances the birds fell dead at the fire.

I have from the first maintained that a detonator ignites *more grains of powder than a flint and steel gun does.* The result of my experiment has fully established my opinion upon this point. The fire from the copper cap being driven with considerable force into the load of powder, ignites the whole; the force of which explosion being too great for the weight of shot, diminishes at a certain distance the velocity of the latter.

On the other hand, the fire communicates with the powder in the barrel of a flint and steel gun merely by the ignition of grain by grain; so that just as much of the powder, and no more, explodes as is sufficient to discharge the load.

A proper regulation of the charge, therefore, seems alone requisite to make a detonator carry as strong as a flint and steel gun; and if the means for diminishing the force of the powder instead of increasing it, had been consulted, less time would have produced a more satisfactory result.

Sporting Magazine.

PRAIRIE WOLVES.

PRAIRIE WOLF.

CANIS LATRANS.

[Plate VII.]

Small Wolf. Du Pratz, *Louisiana*, vol. ii. p. 54.—*Prairie Wolf.* Lewis & Clark.—*Canis latrans.* Say, *Expedition to the Rocky Mountains*, i. p. 168. Richardson, *Faun. Am. bor.* 73.—*Barking Wolf.* Godman, i. p. 260.—*Philadelphia Museum.*

It is a subject of regret, that the information we possess respecting most of our native quadrupeds, and more especially of those which are confined to the western portion of this continent, should be so exceedingly scanty and defective; this is particularly the case with the subject of our present sketch; by far the greater proportion of our knowledge of the Prairie Wolf being derived from the description given of it by Mr. Say, in the work above cited; and that of Dr. Richardson, in his Fauna Americana Boreali; it is true, that it had been previously noticed by other travellers, but, their accounts are too succinct and confused to afford such data as are required, either to establish its identity, or to enable us to ascertain its peculiar habits. We shall, therefore, freely avail ourselves of the labours of the distinguished naturalists just mentioned, incorporating with their descriptions, such additional information as we have met, in the course of our investigations.

The Prairie Wolf appears to have been well known to Indian traders, and by them distinguished from its kindred species, long before it was recognised by naturalists. Dr. Richardson states, that skins of this animal have always formed part of the Hudson Bay Company's importations, under the title of *cased wolves;* so called because they are not split open like the skins of larger animals, but stripped off and inverted as those of the fox and rabbit.

They are found in the western parts of the United States and Canada, being extremely numerous in the prairies to the west of the Missouri, and also occur, though not so plentifully, in the vicinity of the Colombia. Their northern limit is about the fifty-fifth degree of north latitude; but our information as to their southern range is very vague, though it is probable that they are found in the northern provinces of Mexico.

Their general colour is cinereous or grey, mixed with black, dull fulvous or cinnamon above. The heir is dusky plumbeous at base, dull cinnamon in the middle of its length, and grey or black at its extremity; it is longer on the vertebral line, than on other parts of the body. The ears are erect, rounded at tip and lined with grey hair; of a cinnamon colour behind. The eyelids are edged with black; the superior eyelashes are black beneath and at tip above; the supplemental lid is margined with blackish brown before and edged with the same colour behind; the iris is yellow and the pupil blue-black; there is a blackish-brown spot upon the lachrymal sac. The face is of a cinnamon colour, with a greyish tint on the nose; the lips are white, edged with black, and having three rows of black bristles. The head between the ears is grey, intermixed with a dull cinnamon colour, the hairs being dull plumbeous at base. The colour, of the sides is paler than that of the back, with faint black bands above the legs, which are of a cinnamon colour on the outside, becoming brighter posteriorily. The tail is straight, fusiform, and bushy, of a grey colour mixed with cinnamon, and having a spot near the base above and the tip black, beneath it is white.

These animals differ exceedingly in their markings and general colour, some specimens not having the brown tints, but being almost wholly of a grey hue, with an intermixture of black in irregular spots and lines; other individuals have a broad black mark on the shins of the fore legs, like the European wolf. Our representation is taken from well-preserved specimens in the Philadelphia Museum, obtained by Mr. T. R. Peale, whilst attached to the Expedition to the Rocky Mountains, under the command of Major Long.

The Prairie Wolf is about three feet and a half in length, including the tail, which is about one foot. The ears are four inches in height from the top of the head. The extremity of the trunk of the tail, reaches the projection of the os calcis, when the leg is extended. They bear so strong a resemblance to the domestic dog, so common in the Indian villages, that Mr. Say is of opinion they are the original stock from whence the latter is derived. Their bark is also very similar to that of the dog; in fact the first two or three notes cannot be distinguished from those of a small terrier, but these are succeeded by a prolonged yell. It was from this peculiarity of barking, that Mr. Say bestowed the specific name of *latrans* on this animal. This species does not diffuse the offensive odour, so remarkable in most of the other species, particularly, the *nubilus* (Say.)

The Prairie Wolves occur in great numbers in the great western plains, uniting like their brethren the jackals, in packs for the purpose of hunting deer, which they frequently succeed in running down and killing, particularly in a hard winter when a crust forms on the snow. It is also said, that they will drive these animals into a lake and remain concealed in the vicinity, watching till the exhausted deer return, and fall an easy prey to their insatiate pursuers. This is the more probable, as it is well known that some of the other species of American wolves practice equally ingenious stratagems to entrap animals of superior speed. Cap-

tain Franklin gives the following interesting account of this mode of taking their prey. "So much snow," says he, "had fallen on the night of the 24th, that the track we intended to follow was completely covered; and our march to-day was very fatiguing. We passed the remains of two red deer, lying at the bases of perpendicular cliffs, from the summits of which they had probably been forced by the wolves. These voracious animals, who are inferior in speed to the moose, or red deer, are said frequently to have recourse to this expedient, in places where extensive plains are bounded by precipitous cliffs. Whilst the deer are quietly grazing, wolves assemble in great numbers, and forming a crescent, creep slowly towards the herd, so as not to alarm them much at first; when they perceive that they have fairly hemmed in the unsuspecting creatures, and cut off their retreat across the plain, they move more quickly, and with hideous yells terrify their prey, and urge them to flight by the only open way, which is towards the precipice; appearing to know that, when the herd is once at full speed, it is easily driven over the cliff —the rearmost urging on those that are before. The wolves then descend at their leisure, and feast on the mangled carcases."

Mr. Say seems to think that they require an exercise of all their speed, to succeed in the chase of a deer or young buffalo, but from the statement of Dr. Richardson, and of a writer in the Sporting Magazine, it appears, that they are very swift and long winded; the former of these gentlemen states, that he was informed by a trader who had resided for many years in the Hudson Bay Company's possessions, that the only animal which surpassed the Prairie Wolf in swiftness, was the prong horned antelope. Notwithstanding their speed and cunning, they are often exposed to great distress for want of food, and are reduced to the necessity of satisfying their hunger with prairie mice, snakes, &c., and even of appeasing, in some degree, the craving of appetite by distending their stomach with wild plums, and other equally indigestible food. They have been known to lay waste fields of corn, of which grain they are very fond when it is in a green state. They will also venture near the encampment of the traveller, and follow the hunter in hopes of partaking of any offals that may be left.

The Prairie Wolf closely resembles the other species in rapacity and cunning; there are few animals that are more suspicious and mistrustful, or avoid snares and traps with such intuitive sagacity. Mr. Say gives the following account of plans of taking them, which were attempted by Mr. Peale: "He constructed and tried various kinds of traps, one of which was of the description called a 'live trap,' a shallow box, reversed and supported at one end by the well known kind of trapsticks, usually called the 'figure four' which elevated the front of the trap, upwards of three feet above its slab flooring; the trap was about six feet long, and nearly the same in breadth, and was plentifully baited with offal. Notwithstanding this arrangement, a wolf actually burrowed under the flooring, and pulled down the bait through the crevices of the floor; tracks of different sizes were observed about the trap. This procedure would seem the result of a faculty beyond mere instinct.

"This trap proving useless, another one was constructed in a different part of the country, formed like a large cage, but with a small entrance on the top, through which the animals might enter, but not return; this was equally unsuccessful; the wolves attempted in vain to get at the bait, as they would not enter by the route prepared for them.

"A large double 'steel trap' was next tried; this was profusedly baited, and the whole carefully concealed beneath the fallen leaves. This was also unsuccessful. Tracks of the anticipated victims, were next day observed to be impressed in numbers on the earth near the spot; but still the trap, with its seductive charge, remained untouched. The bait was then removed from the trap, and suspended over it from the branch of a tree; several pieces of meat were also suspended in a similar manner from trees in the vicinity; the following morning the bait over the trap alone remained. Supposing that their exquisite sense of smell, warned them of the position of the trap, it was removed, and again covered with leaves, and the baits being disposed as before, the leaves to a considerable distance around were burned, and the trap remained perfectly concealed by ashes, still the bait over the trap was avoided. Once only this trap was sprung, and had fastened, for a short time, on the foot of another species."—*(C. nubilus—Say.)*

Not disheartened by these fruitless attempts, which were repeated and varied in every possible manner, Mr. Peale attempted another scheme, which eventuated in complete success. "This was a log trap, in which one log is elevated above another at one end, by means of an upright stick, which rests upon a rounded horizontal trigger stick on the inferior log.

There can be but little doubt, that the Prairie Wolf might be domesticated, for it is a remarkable fact in the history of animals, that the larger carnivora are more readily and completely tamed than the smaller. This may arise from several causes, but the most prominent is, that although they are endowed with greater strength, they are likewise possessed of a superior degree of intelligence. Experience confirms the truth of this reasoning. There is no carnivorous animal, that may not be tamed by proper treatment, and which will not become useful and even affectionate to a certain degree. But this disposition is evinced in very different proportions by different species. Thus, the smaller

carnivora, even when most perfectly tamed, retain characters peculiar to themselves, which can never be eradicated; the cat, although caressed and fondled, seldom or ever forgets the marked propensities of her race, whilst the dog, though infinitely more powerful, loses its natural peculiarities to assume those of his master. Instinct appears to militate, in the strongest manner, against education, whilst those animals possessing more of that faculty approaching to human reason, are capable of acquiring habits and manners wholly at variance with their natural character.

THE OSTRICH.

Unequalled in stature among birds, strikingly peculiar in its form, singular in its habits, and eagerly sought after as furnishing in his graceful plumes one of the most elegant among the countless vanities both of savage and civilized life, the Ostrich has always excited a high degree of interest in the minds even of the most superficial observers. But far more strongly does this feeling prevail in that of the reflecting naturalist, who does not regard this gigantic bird as an isolated portion of the great system of nature, but perceives in it one of those remarkable links in the complicated chain of the creation, too often invisible to human scrutiny, but occasionally too obvious to be overlooked, which connect together the various classes of animated beings. With the outward form and the most essential parts of the internal structure of Birds, it combines in many of its organs so close a resemblance to the Ruminating Quadrupeds, as to have received, from the earliest antiquity, an epithet indicative of that affinity which later investigations have only tended more satisfactorily to establish. The name of Camel-Bird, by which it was known, not only to the Greeks and Romans, but also to the nations of the East; the broad assertion of Aristotle, that the Ostrich was partly Bird and partly Quadruped; and that of Pliny, that it might almost be said to belong to the Class of Beasts; are but so many proofs of the popular recognition of a well authenticated zoological fact

The Ostrich, in fact, is altogether destitute of the power of flight, its wings being reduced to so low a degree of development as to be quite incapable of sustaining its enormous bulk in the air. Its breast-bone is consequently flattened and uniform on its outer surface, like that of a Quadruped, offering no trace of the elevated central ridge so generally characteristic of Birds, and so conspicuously prominent in those which possess the faculty of supporting themselves long upon the wing. Its legs, on the contrary, are excessively powerful; and are put in action by muscles of extraordinary magnitude. This muscular power, together with the great length of its limbs, enables it to run with incredible swiftness, and to distance, with little exertion, the fleetest Arabian horses. The total want of feathers on every part of these members, and their division into no more than two toes, connected at the base by a membrane, a structure not unaptly compared to the elongated and divided hoof of the Camel, have always been considered striking points of resemblance between these animals: but there is another singularity in their external conformation which affords a still more remarkable coincidence. They are both furnished with callous protuberances on the chest, and on the posterior part of the abdomen, on which they support themselves when at rest; and they both lie down in the same manner, by first bending the knees, and then applying the anterior callosity, and lastly, the posterior, to the ground. Add to this that, equally patient of thirst, and endowed with stomachs somewhat similar in structure, they are both formed for inhabiting, to a certain extent, the same arid deserts, and it will readily be granted, that the affinity between these animals is not so fanciful as might, at first sight, be imagined.

The family of Birds, of which the Ostrich forms the leading type, is remarkable for the wide dispersion of its several members; each of them vindicating, as it were, to itself, a distinct portion of the surface of the earth. The Ostrich, which is spread over nearly the whole of Africa, is scarcely known beyond the limits of the Arabian deserts; while the Cassowary occupies its place amid the luxuriant vegetation of the Indian Archipelago. The Emeu is confined to the great Australian Continent, and the Rhea to the southern extremity of the Western Hemisphere. And finally, returning homewards, we find the Bustard, the largest bird of this quarter of the globe, receding, it is true, in some particulars, from the typical form, but still fairly to be regarded as the representative of the family in Europe. Some species, however, belong to the same group with this latter bird, extend themselves over a considerable portion both of Africa and Asia.

The principal external characters by which the birds above enumerated are connected together, consist in the absence of the hind-toe, of which not even a vestige remain; in the length and power of their legs, which are completely bare of feathers; in the shortness of their wings, and their uselessness as organs of flight; in the length of their necks; and in their strong, blunt, flattened bills. The plumes of the more typical among them are distinguished by the want of cohesion between their barbs, a cohesion which, in other birds, is manifestly subservient to the purposes of flight, and which would, therefore, have been

superfluous in these, which never raise themselves above the surface of the ground. Their food is almost entirely vegetable, and consists of seeds and fruits, or, rarely, of eggs and worms. Between the crop, which is of enormous size, and the gizzard, which varies in thickness and power, several of them are furnished with an additional ventricle, analogous to the structure which prevails in Ruminating Quadrupeds. They occupy a station in some degree intermediate between the Rasorial Birds and the Waders, approaching the latter in many particulars of their outward form, but much more closely connected with the former in their internal structure, in their food, and in their habits.

Of the differential characters which give to the Ostrich the rank of a genus, the most important is founded on the structure of its feet, which have only two toes, both directed forwards, and connected at their base by a strong membrane; the internal being considerably larger than the external, and being furnished with a thick hoof-like claw, which is wanting in the latter. The legs are covered with a rugged skin, reticulated in such a manner as to present the appearance of large scales: they are completely naked throughout, even in the muscular part, which, like the under surface of the wings, is bare of feathers, and exhibits a flesh-coloured tinge. The wings are each of them armed with two plumeless shafts, resembling the quills of a Porcupine. Instead of quill-feathers, they are ornamented with gracefully undulating plumes, and similar appendages terminate the tail. The long neck is covered on its upper half with a thin down, through which the colour of the skin is distinctly visible. The head is small in proportion to the magnitude of the bird, and is invested with the same kind of covering as the neck, except on its upper surface, which is bald and callous. The ears are naked on the outside, and hairy within; the eyes are large and brilliant, and so prominently placed as to enable both to obtain a distinct view of the same object at the same time. They bear a remarkable similarity to the eyes of mammiferous quadrupeds, and have frequently been compared to those of man, which they also resemble in the breadth and mobility of their upper lids, and in the lashes by which these organs are fringed. The beak is short, straight, broad at the base, and rounded at the point, flattened from above, downwards, extremely strong, and opening with a wide gape. The nostrils are seated near the base of the upper mandible, and are partly closed by a cartilaginous protuberance.

The African Ostrich is the only species to which the foregoing characters are applicable. It is generally from six to eight feet in height. The lower part of the neck of the male, and the whole of the body, are clothed with broad and short feathers of a deep black, intermingled with a few others, which are nearly white, and are barely visible, except when the plumage is ruffled. In the female, the general colour of the feathers is of a greyish, or ashy-brown, slightly fringed with white. In both sexes the large plumes of the wings and tail are beautifully white. The bill is of the colour of horn, becoming blackish towards the point. The iris is deep hazel. On the head and neck the hairy down is clear white. In the young bird these parts, as well as the muscles of the legs, are covered like the rest of the body, with ash-coloured feathers, which fall off after the first year, and are not again produced.

The character of the Ostrich, like that of other granivorous birds, is extremely mild. It never makes use of its great muscular power to attack, and rarely even in its own defence. It generally has recourse to flight, as its most effectual security against danger; and were its intelligence equal to its velocity, this resource would seldom fail of success. The chase of these birds is accounted one of the most skilful and difficult exercises both for the Arab and his horse, requiring at once the most unwearied patience and the most reckless impetuosity. The former is absolutely necessary, in order to keep them within sight, and to watch their motions as they wheel round in a circle of greater or less extent, and the latter to seize the favourable opportunity of dashing down upon them in their course, and disabling them, which is generally effected by means of a stick thrown with dexterity between their legs. A chase of this kind will frequently last from eight to ten hours. When taken, they evince no ill humour, and after a time become in some degree docile, suffering themselves to be mounted and ridden like horses. M. Adamson, who had several times witnessed the spectacle in Senegal, declares, that even when mounted by two men, they outstripped in speed an excellent English horse. In running they always expand their wings, not, as has been erroneously imagined, to catch the wind in order to assist them in their flight, for they do it indifferently, whether running with or against the wind, but, in all probability, to counterbalance their great height by the extension of these lateral appendages.

Their natural food consists entirely of vegetable substances, and more especially of seeds and the various kinds of grain, in pursuit of which they frequently commit the greatest devastation among the crops in cultivated countries. But so obtuse is the sense of taste in this bird, that it swallows with the utmost indifference, sometimes even with greediness, whatever comes in its way, whether of animal or mineral origin, partly for the purpose, as it should seem, of distending its stomach, and partly also to assist, like the gravel in the crops of our common poultry,

in the trituration of its food. Its fondness for the metals, in particular, was early remarked, and obtained for it the epithet of the "iron-eating Ostrich." Popular credulity even went so far as to assign to it the power of digesting these substances, and many are the allusions in our older writers to this fancied property. As an amusing illustration of the prevalence of this belief, we may quote the following characteristic lines from "The Boke of Philip Sparow," written by Master John Skelton, a laurelled poet of the reign of King Henry the Eighth:

> The Estridge that will eate
> An horshowe so greate
> In the steade of meat
> Such fervent heat
> His stomake doth freat.

We know not if the Ostriches of these days are given to the eating of horseshoes; but unquestionably they have a particular fancy for keys, nails, and other such easily disposed of articles. It would, however, be perfectly ridiculous to imagine that the stomach of this bird is capable of digesting metals, and converting them into food, although it is undoubtedly true, that after having lain in that organ for a length of time, they become corroded by its juices. M. Cuvier found in the stomach of an individual that died in the Paris Menagerie, nearly a pound weight of stones, bits of iron and copper, and pieces of money worn down by constant attrition against each other, as well as by the action of the stomach itself. The human stomach, we may add, is equally capable of a similar exertion, although not so frequently called upon to put it to the test. Many of our readers will no doubt recollect the case of an American sailor, who died in one of the London hospitals in 1809, and who had swallowed, in the ten previous years, no fewer than thirty-five clasp-knives. Fragments of these, to the number of between thirty and forty, thirteen or fourteen of them being evidently blades, were found in his stomach after death. "Some of these," says Dr. Marcet, in his account of the case, "were remarkably corroded and reduced in size, while others were comparatively in a tolerable state of preservation." More than one instance of a similar description has since been put on record.

Although the Ostriches live together in large herds, the received opinion among naturalists is, that the males attach themselves to a single female. There is some difficulty in determining the number of eggs laid by the latter; some travellers estimating it as high as eighty, while others reduce it to ten. Of this latter opinion was Le Valliant, whose authority is decidedly entitled to the highest respect on every subject connected with the habits of birds, which he studied in a state of nature with the scrutinizing eye of a philosopher, and the patient zeal of a scientific observer.

He relates, however, a circumstance which once fell under his own observation, and which tends in some measure to reconcile these discordant statements, while at the same time it renders it questionable whether the Ostrich is not, occasionally, at least, polygamous. Having disturbed a female from a nest containing thirty-eight eggs of unequal size, and having thirteen others scattered around it, he concealed himself at a short distance, and observed, during the day, no less than four females successively taking part in the maternal office. Towards the close of the evening, a male also took his share of the duty; and Le Vaillant remarks, that he has frequently had opportunities of verifying the fact, that the male bird sits as well as the female. In this case it would appear probable that several females had deposited their eggs in one common nest. The extraordinary number of eggs said to have been sometimes found, may also, perhaps, be accounted for by the fondness of the natives for these delicacies, which they abstract from the nest by means of a long stick, cautiously avoiding to introduce their hands, which, they affirm, would infallibly drive the bird to abandon the place. The Ostrich naturally continues laying in order to complete her usual number; and in this way forty or fifty eggs may actually have been obtained from a single female.

Within the torrid zone the eggs are merely laid in the warm sand, the female sometimes sitting upon them during the night; but, in general, the rays of the sun are sufficiently powerful to hatch them, without any assistance on her part. She does not, however, as has been commonly stated, neglect her offspring, but watches over them with as much solicitude as any other bird, hovering around the spot in which they are deposited, and if surprised in her occupation, making a short circuit, and constantly returning to the object of her care. This doubling kind of flight is regarded by the hunters as a certain sign of the vicinity of her eggs, as at all other times the Ostriches pursue, for a time at least, a direct and straight forward course. In the more temperate regions, and especially in the neighbourhood of the Cape, the Ostrich sits like other birds, always choosing the most retired and solitary places. Her nest consists merely of a pit of about three feet in diameter dug in the sand, which is thrown up around it so as to form an elevated margin. At some little distance are usually placed, each in a separate cavity in the sand, a number of rejected eggs, which are said to be intended to serve as nutriment for the young brood, as soon as hatched; a most remarkable instance of foresight, if truly stated, but not yet confirmed beyond the possibility of doubt.

The eggs are extremely hard, very weighty, and twenty or thirty times as large as those of our common hen. The colour of the shells is a dirty white, tinged with light

yellow. These are frequently formed into cups; and are used in various ways as ornaments by the natives of the countries in which they are found. The eggs themselves form, according to Thunberg, an article of considerable commerce at the Cape, where they are sold to the vessels that touch there, the thickness of their shells rendering them preferable for a sea voyage to those of any other bird. They are generally regarded as great luxuries; but on this point there is some difference of opinion, M. Sonnini affirming that, either from habit or from prejudice, he could not bring himself to consider them so good as the eggs to which he had been accustomed; while M. Cuvier rapturously exclaims, that they are not merely to be regarded as delicacies, but are, in fact, "ipsissimæ deliciæ;" an expressive, but untranslatable phrase, which we can only render, in piebald English, the ne plus ultra of good eating. It is by no means improbable that, in the latter instance, the rarity of the dish conferred upon it a higher relish than its own intrinsic flavour would have warranted; as was undoubtedly the case when the dissolute Roman Emperor, in Rome's degenerate days, ordered the brains of six hundred Ostriches to be served up to his guests at a single supper.

The flesh of these birds was among the unclean meats forbidden to the Jews by the Mosaical law. It seems, however, to have been in especial favour with the Romans, for we read of its being frequently introduced at their tables. We are even told by Vopiscus, that the pseudo-Emperor Firmus, equally celebrated for his feats at the anvil and at the trencher, devoured, in his own imperial person, an entire Ostrich at one sitting. It is to be hoped that the bird was not particularly old; for it is allowed on all hands, at least in the present day, that when it has reached a certain age, it is both a tough and an unsavoury morsel. The young are, nevertheless, said to be eatable; and we may well imagine that the haunch of such a bird would furnish a tolerably substantial dish. The Arabs, it may be added, have adopted the Jewish prohibition, and regard the Ostrich as an unclean animal; but some of the barbarous tribes of the interior of Africa, like the Struthiophagi of old, still feed upon its flesh whenever they are fortunate enough to procure it.

The Ostriches in the Society's collection would be truly a noble pair, were it not for an unnatural curve in the neck of the male, in consequence, it is said, of its having formerly swallowed something more than usually bulky, and hard of digestion. It was probably on account of this slight deformity that the female took upon herself, soon after their arrival in the Gardens, to tease and worry him in various ways, so that the poor bird was literally henpecked by his mate. The system of persecution was at length carried so far that it was found necessary to separate them, and the female has now the whole enclosure to herself. She is a remarkably fine bird, in excellent health and condition, and, when her neck is elevated to its utmost pitch, is fully eight feet in height. They were both, formerly, in the possession of the late Marchioness of Londonderry, on whose death they were presented to the Society, by the Marquis of Lothian, in the spring of the present year.—*Menag. Zool. Society.*

From the Edinburgh Philosophical Journal.

ŒSTRUS HOMINIS,

Or the Larva of a Gad-Fly, which deposits its Eggs in the Bodies of the Human Species.

An accurate knowledge of the natural history of the genus Œstrus, (gad-fly or *breeze*) is of great importance in an economical point of view, when we consider that the most valuable of our domestic animals, the horse, ox, and sheep, form the usual nidus for their development and increase, and are frequently incommoded, sometimes essentially injured, or even destroyed, by their attacks. The insect called *botts* by farriers, is the larva of the *Œstrus Equi*, and, although Mr. Bracy Clark (to whom we owe the best account of that and other species of the genus) concludes that, upon the whole, they are not injurious to the horse, it appears from the accounts of Valisnieri, that the epidemic which proved so fatal to the horses of the Mantuan and Veronese territories during the year 1713, was primarily occasioned by these larvæ. The disease called *staggers* in sheep is likewise occasioned by an insect of this genus, (*Œstrus ovis*) and the hides of cattle are perforated by another kind, which lives beneath the skin. The reindeer of the Laplanders, which has been said to unite in one animal the useful qualities of many, is more than almost any other a martyr to a species of gad-fly, probably peculiar to itself, and therefore named by naturalists *Œstrus Tarandi*.

That man himself, the "Lord of the Creation," should be the subject of similar attacks, is not so generally known. Humboldt, however, mentions, that he examined several South American Indians, whose abdomens were covered with small tumors, produced by what he inferred (for no very positive information seems to have been acquired on the subject) to have been the larvæ of some species of Œstrus. Larvæ of analogous forms have also been detected in the frontal and maxillary sinuses of Europeans; and the surgical and physiological journals of our own and other

countries, have reported extraordinary instances of flies, beetles, &c. working out their way from different parts of the humane frame.

Mr. Clark mentions a case in which the gad-fly of the ox appears to have left its accustomed prey, and deposited its eggs in the jaw of a woman, who eventually died of disease produced by the botts which sprung from the eggs. Leeuwenhoeck obtained maggots from a glandular swelling on the leg of a woman. These he fed with flesh till they assumed the pupa state, and afterwards produced a perfect insect as large as a flesh-fly. Lempriere, in his work on the *Diseases of the Army in Jamaica*, records the case of a lady, who, after recovering from a dangerous fever, died a victim to the maggots of a large blue fly, which sometimes buzzes about the sick in the West Indies, and which, in the case alluded to, made their way from the nose through the *os cribriforme*, and so to the brain. A revolting instance of *scholechiasis* is narrated in Bell's *Weekly Messenger*, as quoted by Messrs. Kirby and Spence. A pauper, of the name of Page, was in the habit of secreting the remnants of his food betwixt his shirt and skin. On one occasion, a piece of flesh was so concealed, when the poor man was taken ill and laid himself down to repose in a field in the parish of Scredington. The weather being hot, the meat speedily became putrescent, and was *blown* by the flies. The maggots, which were, of course, hatched almost immediately, after devouring the meat, proceeded to prey upon the body of the pauper, whose still living form, when discovered by some neighbouring inhabitants, presented a most appalling spectacle. He was carried to a surgeon, but died a few hours after the first dressing of his wounds.

These, and other similar cases, ought not to be considered so much in the light of ordinary or natural effects, as the result of accidents produced by filth and disease. It is otherwise, however, with the gad-flies, whose natural habit appears to be to deposit their eggs beneath the skin, or among the hairs of quadrupeds, in a healthy or unimpaired condition. Although systematic authors have described an *Œstrus hominis*, said to deposit its eggs beneath the skin of man, and to produce ulcers, which sometimes prove fatal, yet nothing seems to have been added of late to these vague indications, in illustration of its real history.

The following is an authentic instance, which lately occurred to our knowledge, and with the particulars of which we were favoured by Dr. A. Hill, of Greenock. George Killock, steward of the ship Cecilia, while in the harbour of George Town, Demerara, during the month of September, 1828, felt an extreme itching in a spot situated on the lower and back part of the right arm, which he frequently rubbed and scratched. The feeling was quite different from that caused by the bite of the musquito or sand-fly, with which he was sufficiently familiar. Ere long, something like a bile or indolent tumour formed, which occasioned great pain, as if a sharp instrument had been thrust into the arm, or as if suppuration was going on at the bones. This extreme pain came on periodically in paroxysms, and the arm was poulticed for a length of time. The swelling was not so great as to affect the movements of the joint, and as there was no appearance of its *coming to a point*, applications were given up. One day, about five weeks after the commencement of the pain, Killock observed some bloody matter on his shirt sleeve, which he showed to the captain, when the latter distinctly perceived something in motion in the centre of a small orifice, which had become apparent on the tumour. The motion increased, till, to his surprise, the head of an insect protruded itself; and this it continued to do daily, though the animal was observed to withdraw into its burrow when any one came near, or even pointed at it. The pain at this time was so acute as to cause sickness. The chamber of the insect seemed exactly to fit its body, and merely admitted of its motions outwards and inwards. It occasionally discharged a quantity of blood-coloured matter. Many attempts were made to seize it, but it always instantly retreated, and the captain, not knowing but what it partook of the nature of the Guinea worm, with which he was well acquainted, was fearful of a forced extraction, lest it should break asunder, and leave a principal portion in the wound. However, it was observed to protrude more and more of its body every day, and, upon one occasion, it came out to the length of more than an inch. At last it dropt out of its own accord upon the cabin floor, with a noise resembling that which a pebble would make on falling on the ground. It kept moving and turning about for some time, like an earth-worm, but, ere long, shrunk into nearly half its previous size. The atmosphere was at this time cool, the ship being within a week's sail of Greenock. The insect lived for three days, and was then put into spirits, after which it shrunk still more. Calculating from the period at which the itching was first felt, it had lived in Killock's arm, in the larva state, for about six weeks. The wound healed readily, leaving externally the appearance of a small scar.

In the 12th edition of the *Systema Naturæ*, there is no mention of this insect. Gmelin, however, says, that it dwells beneath the skin of the abdomen *six months*, penetrating deeper if it be disturbed, and becoming so dangerous as sometimes to occasion death. In Dr. Turton's *General System of Nature*, there is the following notice of this insect, or of one of which the habits are similar. "*Œstris hominis*. Body entirely brown. Inhabits South America, *Linne ap. Pall, Nord. Beytr.* p. 157. Deposits its eggs under the skin, on the bellies of the natives; the larva, if

it be disturbed, penetrates deeper, and produces an ulcer which frequently becomes fatal."

We are informed that Killock, previous to this attack, while at work, usually wore his shirt-sleeves rolled up above his elbows; and that, while in George Town, Demerara, he generally slept on deck. It is easy, then, to suppose, that the Œstrus, or parent fly, had availed itself of a proper opportunity to deposit its egg upon his arm, probably by a slight puncture of the skin, by means of the ovipositor with which it is furnished. When the larva had attained its full size, it dropped out, instinctively searching for a covering of natural earth, in which to undergo the intermediate state of pupa, which it is destined to assume for a time before it becomes a winged insect. The instinct of the parent, however admirable under ordinary circumstances, was, of course, insufficient to provide against the accident of Killock's being a seafaring man,—and the larva could not have attained the perfect state, for want of the proper nidus in which the pupa is accustomed to repose. Had a flower-pot, containing earth, been on board the vessel, the different changes of the insect might have been observed, and our knowledge of the species completed. As it is, we are acquainted with the larva alone. Its description is as follows:—

Length, in its present shrivelled condition, seven-tenths of an inch; circumference round the centre, or thickest part, one inch; colour pale dingy apple-green, tinged with brown. The mouth appears to have been somewhat tubular, but is furnished on its upper part with a pair of sharp, minute, hooked crotchets, of a shining black colour, probably for the purpose of adhering more firmly to the spot from which it was desirous to draw its food. The eyes are large and prominent; their colour brown. The body is composed of nine rings or segments, exclusive of the head and anal portion. There are thus, in all, eleven segments, besides the mouth, the exact number of which the larvæ of the European species consist. There are no feet. These organs are, however, obviously supplied by transverse circles of small black spines or hooks, with which the principal segments of the body are furnished; and, besides these, there are several rounded unequal protuberances on the back and sides. The latter are possibly produced or rendered more apparent, by the decrease of size which has taken place. Supposing these minute spinous hooks to be, along with the skin, under the control of muscular action, (and Lyonnet has beautifully exhibited the complicated muscular structure of another larva,) then, according to the direction in which the hooks are pointed, a wriggling motion would produce either outward or inward progression, and serve all the purposes of locomotive organs, just as, (to use a familiar illustration) an ear of barley placed within the sleeve of a pedestrian, works its way in a direction opposite to that to which its *beard* is directed.

As further testimony to the above, the following is copied from the Journal of the Academy of Natural Sciences of Philadelphia, being an extract of a letter from a gentleman from whose leg this larva was extracted:

"After a very sultry day's march, and being very much fatigued, I went to bathe in the Chama, a small stream emptying in the lagoon of Maracaibo. Not long after coming out of the water, I received a sting from some insect, in the left leg, over the upper and forepart of the tibia; it was several days attended with a considerable degree of itching, but without any pain, and I continued on my journey some few days longer, without experiencing much inconvenience, except during several periods of perhaps two or three minutes continuance, when an acute pain came on suddenly, and was severe whilst it continued, and then as suddenly subsided. On my arrival and during my continuance at Il Rosario de Cucuta, I walked with difficulty; there was a considerable tumefaction over the tibia, which had the appearance of an ordinary bile, (Phlegmon) in the centre there was a small black speck; the usual applications were used without any success, and the tumour became more irritated and inflamed, and thus it remained for some days, attended at times with a most acute pain, which, for a few minutes was almost intolerable.

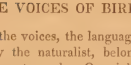
"In returning to Maracaibo, I had to descend the Cottatumba in an open boat, without any shelter, and being wet to the skin by the cold rains which fell every night, I suffered much, and was almost constantly tormented by the tumour, which became more painful at those particular periods than usual; during this passage, which lasted for twelve days, I was induced to scarify it, and had recourse to the usual topical applications, but without success. At times I imagined that I felt something moving, and suspected that there was something alive beneath the skin.

"After my return to Maracaibo I became scarcely able to walk, and was in a manner confined to my quarters. In this situation I continued two weeks longer, the tumour having began to discharge, and without any diminution of the painful periods.

"Being now nearly worried out, it occurred to me to try a poultice of tobacco, which was used for several nights, having previously scarified the tumour: during the day, I frequently dusted it with ashes of segars: as an ingredient, I used rum instead of water, in making the poultice. On the fourth morning after this remedy, I felt considerable relief, and on the fifth, with a forceps, I drew out the worm which you have now in your possession, and which was then dead.

"In a few days the sore assumed a healthy look, and in ten days was perfectly healed up—although, at times, I yet experience a heavy pain in the part from whence the worm has been taken. It had travelled on the periosteum, along the tibia for at least two inches. The severe pain which I experienced for those periods, I attribute to the irritation of some of the branches of the nerves distributed to the parts by the worm in its progress. Respecting this worm their are different opinions among the Spaniards and Creoles. *Ouche* is the name it is called by some, who say it is produced by a worm which crawls on the body, from the ground, and penetrating the skin, increases in size. Others maintain that they are produced from the sting of a winged insect which they call *Zancudo*, others call the insect *Husano;* for my part I am rather inclined to think that they are produced from the sting of a winged insect which deposits its egg."

Larva of Œstrus Hominis.



THE VOICES OF BIRDS.

Rural sounds, the voices, the language of the wild creatures, as heard by the naturalist, belong to, and are in concord with the country only. Our sight, our smell, may perhaps be deceived for an interval by conservatories, horticultural arts, and bowers of sweets; but our hearing can in no way be beguiled by any semblance of what is heard in the grove or the field. The hum, the murmur, the medley of the mead, is peculiarly its own, admits of no imitation, and the voices of our birds convey particular intimation, and distinctly notify the various periods of the year, with an accuracy as certain as they are detailed in our calendars. The season of spring is always announced as approaching by the notes of the rookery, by the jangle or wooing accents of the dark frequenters of its trees; and that time having passed away, these contentions and cadences are no longer heard. The cuckoo then comes, and informs us that spring has arrived; that he has journeyed to us, borne by gentle gales in sunny days; that fragrant flowers are in the copse and the mead, and all things telling of gratulation and of joy: the children mark this well-known sound, spring out, and cuckoo! cuckoo! as they gambol down the lane: the very plough-boy bids him welcome in the early morn. It is hardly spring without the cuckoo's song; and having told his tale, he has voice for no more—is silent or away. Then comes the dark, swift-winged martin, glancing through the air, that seems afraid to visit our uncertain clime: he comes, though late, and hurries through his business here, eager again to depart, all day long in agitation and precipitate flight. The bland zephyrs of the spring have no charms with them; but basking and careering in the sultry gleams of June and July, they associate in throngs, and, screaming, dash round the steeple or the ruined tower, to serenade their nesting mates; and glare and heat are in their train. When the fervour of summer ceases, this bird of the sun will depart. The evening robin, from the summit of some leafless bough, or projecting point, tells us that autumn is come, and brings matured fruits, chilly airs, and sober hours, and he, the lonely minstrel now that sings, is understood by all. These four birds thus indicate a separate season, have no intefe-rence with the intelligence of the other, nor could they be transposed without the loss of all the meaning they convey which no contrivance of art could supply; and, by long association, they have become identified with the period, and in peculiar accordance with the time.

We note birds in general more from their voices than their plumage; for the carols of spring may be heard involuntarily, but to observe the form and decoration of these creatures, requires an attention not always given. Yet we have some native birds beautifully and conspicuously feathered; the goldfinch, the chaffinch, the wagtails, are all eminently adorned, and the fine gradations of sober browns in several others, are very pleasing. Those sweet sounds, called the song of birds, proceed only from the male; and, with a few exceptions, only during the season of incubation. Hence the comparative quietness of our summer months, when this care is over, except from accidental causes, where a second nest is formed; few of our birds bringing up more than one brood in the season. The redbreast, blackbird, and thrush, in mild winters, may continually be heard, and form exceptions to the general procedure of our British birds; and we have one little bird, the woodlark, (*alauda arborea*) that, in the early parts of the autumnal months delights us with its harmony, and its carols may be heard in the air commonly during the calm sunny mornings of this season. They have a softness and quietness, perfectly in unison with the sober, almost melancholy, stillness of the hour. The skylark, also, sings now, and its song is very sweet, full of harmony, cheerful as the blue sky and gladdening beam in which it circles and sports, and known and admired by all; but the voice of the woodlark is local, not so generally heard, from its softness must almost be listened for, to be distinguished, and has not any pretensions to the hilarity of the former. This little bird sings likewise in the spring; but, at that

season, the contending songsters of the grove, and the variety of sound proceeding from every thing that has utterance, confuse and almost render inaudible the placid voice of the woodlark. It delights to fix its residence near little groves and copses, or quiet pastures, and is a very unobtrusive bird, not uniting in companies, but associating in its own little family parties only, feeding in the woodlands on seeds and insects. Upon the approach of man, it crouches close to the ground, then suddenly darts away, as if for a distant flight, but settles again almost immediately. This lark will often continue its song, circle in the air, a scarcely visible speck, by the hour together; and the vast distance from which its voice reaches us in a calm day, is almost incredible. In the scale of comparison, it stands immediately below the nightingale in melody and plaintiveness; but compass of voice is given to the linnet, a bird of very inferior powers. The strength of the larynx and of the muscles of the throat in birds, is infinitely greater than in the human race. The loudest shout of the peasant is but a feeble cry, compared with that of the golden-eyed duck, the wild goose, or even this lark. The sweet song of this poor little bird, with a fate like that of the nightingale, renders it an object of capture and confinement, which few of them comparatively survive. I have known our country birdcatchers take them by a very simple but effectual method. Watching them to the ground, the wings of a hawk, or of the brown owl, stretched out, are drawn against the current of air by a string, as a paper kite, and made to flutter and vibrate like a kestrel, over the place where the woodlark has lodged; which so intimidates the bird, that it remains crouching, and motionless as a stone, on the ground; a hand-net is brought over it, and it is caught.

From various little scraps of intelligence scattered through the sacred and ancient writings, it appears certain, as it was reasonable to conclude, that the notes now used by birds, and the voices of animals, are the same as uttered by their earliest progenitors. The language of man, without any reference to the confusion accomplished at Babel, has been broken into innumerable dialects, created or compounded as his wants occurred, or his ideas prompted; or obtained by intercourse with others, as mental enlargement or novelty necessitated new words to express new sentiments. Could we find a people from Japan or the Pole, whose progress in mind has been stationary, without increase of idea, from national prejudice or impossibility of communication with others, we probably should find little or no alteration in the original language of that people; so, by analogy of reasoning, the animal, having no idea to prompt, no new want to express, no converse with others, (for a note caught and uttered merely, is like a boy mocking the cuckoo,) so no new language is acquired. With civilized man, every thing is progressive; with animals, where there is no mind, all is stationary. Even the voice of one species of birds, except in particular cases, seems not to be attended to by another species. That peculiar call of the female cuckoo, which assembles so many contending lovers, and all the various amatorial and caressing language of others, excites no influence generally, that I am aware of; with all but the individual species, it is a dialect unknown. I know but one note, which animals make use of, that seems of universal comprehension, and this is the signal of danger. The instant that is uttered, we hear the whole flock, though composed of various species, repeat a separate moan, and away they all scuttle into the bushes for safety. The reiterated "twink, twink" of the chaffinch, is known by every little bird, as information of some prowling cat or weasel. Some give the maternal hush to their young, and mount to inquire into the jeopardy announced. The wren, that tells of perils from the hedge, soon collects about her all the various inquisitive species within hearing, to survey and ascertain the object, and add their separate fears. The swallow, that shrieking darts in devious flight through the air, when a hawk appears, not only calls up all the hirundines of the village, but is instantly understood by every finch and sparrow, and its warning attended to. As nature, in all her ordinations, had a fixed design and foreknowledge, it may be that each species had a separate voice assigned it, that each might continue as created, distinct and unmixed: and the very few deviations and admixtures that have taken place, considering the lapse of time, association and opportunity, united with the prohibition of continuing accidental deviations, are very remarkable, and indicate a cause and original motive. That some of the notes of birds are, as language, designed to convey a meaning, is obvious, from the very different sounds uttered by these creatures at particular periods: the spring voices becomes changed as summer advances, and the acquirements of the early season have ceased; the summer excitements, monitions, informations, are not needed in autumn, and the notes conveying such intelligences are no longer heard. The periodical calls of animals, croaking of frogs, &c. afford the same reasons for concluding that the sound of their voices by elevation, depression, or modulation, conveys intelligence equivalent to an uttered sentence. The voices of birds seem applicable in most instances to the immediate necessities of their condition; such as the sexual call, the invitation to unite when dispersed, the moan of danger, the shriek of alarm, the notice of food. But there are other notes, the designs and motives of which are not so obvious. One sex only is gifted with the power of singing, for the purpose, as Buffon supposed,

of cheering his mate during the period of incubation; but this idea, gallant as it is, has such slight foundation in probability, that it needs no confutation: and, after all, perhaps, we must conclude, that, listened to, admired, and pleasing, as the voices of many birds are, either for their intrinsic melody, or from association, we are uncertain what they express, or the object of their song. The singing of most birds seems entirely a spontaneous effusion produced by no exertion, or occasioning no lassitude in muscle, or relaxation of the parts of action. In certain seasons and weather, the nightingale sings all day, and most part of the night; and we never observe that the powers of song are weaker, or that the notes become harsh and untunable, after all these hours of practice. The song-thrush, in a mild moist April, will commence his tune early in the morning, pipe unceasingly through the day, yet, at the close of eve, when he retires to rest, there is no obvious decay of his musical powers, or any sensible effort required to continue his harmony to the last. Birds of one species sing, in general, very like each other, with different degrees of execution. Some countries may produce finer songsters, but without great variation in the notes. In the thrush, however, it is remarkable, that there seems to be no regular notes, each individual piping a voluntary of his own. Their voices may always be distinguished amid the choristers of the copse, yet some one performer will more particularly engage attention by a peculiar modulation or tune; and should several stations of these birds be visited in the same morning, few or none probably will be found to preserve the same round of notes; whatever is uttered, seeming the effusion of the moment. At times a strain will break out perfectly unlike any preceding utterance, and we may wait a long time without noticing any repetition of it. During one spring, an individual song-thrush, frequenting a favourite copse, after a certain round of tune, trilled out most regularly, some notes that conveyed so clearly the words, lady-bird! lady-bird! that every one remarked the resemblance. He survived the winter, and in the ensuing season the lady-bird! lady-bird! was still the burden of our evening song; it then ceased, and we never heard this pretty modulation more. Though merely an occasional strain, yet I have noticed it elsewhere—it thus appearing to be a favourite utterance. Harsh, strained, and tense, as the notes of this bird are, yet they are pleasing from their variety. The voice of the black-bird is infinitely more mellow, but has much less variety, compass, or execution; and he, too, commences his carols with the morning light, persevering from hour to hour without effort, or any sensible faltering of voice. The cuckoo wearies us throughout some long May morning, with the unceasing monotony of its song; and, though there are others as vociferous, yet it is the only bird I know that seems to suffer from the use of the organs of voice. Little exertion as the few notes it makes use of, seem to require, yet, by the middle or end of June, it loses its utterance, becomes hoarse, and ceases from any further essay of it. The croaking of the nightingale in June, or the end of May, is not apparently occasioned by the loss of voice, but a change of note, a change of object; his song ceases when his mate has hatched her brood; vigilance, anxiety, caution, now succeed to harmony, and his croak is the hush, the warning of danger or suspicion to the infant charge and the mother bird.

But here I must close my notes of birds, lest their actions and their ways, so various and so pleasing, should lure me on to protract

"My tedious tale through many a page;"

for I have always been an admirer of these elegant creatures, their notes, their nests, their eggs, and all the economy of their lives; nor have we throughout the orders of creation, any beings that so continually engage our attention as these our feathered companions. Winter takes from us all the gay world of the meads, the sylphs that hover over our flowers, that steal our sweets, that creep, or gently wing their way in glittering splendour around us; and of all the miraculous creatures that sported their hour in the sunny beam, the winter gnat alone remains to frolic in some rare and partial gleam. The myriads of the pool are dormant, or hidden from our sight; the quadrupeds, few and wary, veil their actions in the glooms of night, and we see little of them; but birds are with us always, they give a character to spring, and are identified with it; they enchant and amuse us all summer long with their sports, animation, hilarity and glee; they cluster round us, suppliant in the winter of our year, and, unrepining through cold and want, seek their scanty meal amidst the refuse of the barn, the stalls of the cattle, or at the doors of our house; or, flitting hungry from one denuded and bare spray to another, excite our pity and regard; their lives are patterns of gaiety, cleanliness, alacrity, and joy.—*Jour. of a Naturalist.*

ANTS AND ANT-BEARS

OF SOUTH AMERICA.

In the far extending wilds of Guiana, the traveller will be astonished at the immense quantity of Ants which he perceives on the ground and in the trees. They have nests in the branches, four or five times as large as that of the rook; and they have a covered way from them to the

ground. In this covered way thousands are perpetually passing and repassing; and if you destroy part of it, they turn to, and immediately repair it.

Other species of Ants again have no covered way; but travel, exposed to view, upon the surface of the earth. You will sometimes see a string of these Ants a mile long, each carrying in its mouth to its nest a green leaf, the size of a sixpence. It is wonderful to observe the order in which they move, and with what pains and labour they surmount the obstructions of the path.

The Ants have their enemies as well as the rest of animated nature. Amongst the foremost of these stand the three species of Ant-bears. The smallest is not much larger than a rat; the next is nearly the size of a fox; and the third a stout and powerful animal, measuring above six feet from the snout to the end of the tail. He is the most inoffensive of all animals, and never injures the property of man. He is chiefly found in the inmost recesses of the forest, and seems partial to the low and swampy parts near creeks, where the Troely tree grows. There he goes up and down in quest of Ants, of which there is never the least scarcity; so that he soon obtains a sufficient supply of food, with very little trouble. He cannot travel fast; man is superior to him in speed. Without swiftness to enable him to escape from his enemies, without teeth, the possession of which would assist him in self-defence, and without the power of burrowing in the ground, by which he might conceal himself from his pursuers, he still is capable of ranging through these wilds in perfect safety; nor does he fear the fatal pressure of the serpent's fold, or the teeth of the famished Jaguar. Nature has formed his fore-legs wonderfully thick, and strong, and muscular, and armed his feet with three tremendous sharp and crooked claws. Whenever he seizes an animal with these formidable weapons, he hugs it close to his body, and keeps it there till it dies through pressure, or through want of food. Nor does the Ant-bear, in the mean time, suffer much from loss of aliment, as it is a well-known fact, that he can go longer without food, than, perhaps, any other animal, except the land tortoise. His skin is of a texture that perfectly resists the bite of a dog; his hinder parts are protected by thick and shaggy hair, while his immense tail is large enough to cover his whole body.

Examine a figure of this animal, in books of natural history, or inspect a stuffed specimen in the best museums, and you will see that the fore-claws are just in the same forward attitude, as those of a dog, or a common bear, when he walks or stands. But this is a distorted and unnatural position; and, in life, would be a painful and intolerable attitude for the Ant-bear. The length and curve of his claws cannot admit of such a position. When he walks or stands, his feet have somewhat the appearance of a club-hand. He goes entirely on the outer side of his fore-feet, which are quite bent inwards; the claws collected into a point, and going under the foot. In this position he is quite at ease; while his long claws are disposed of in a manner to render them harmless to him, and are prevented from becoming dull and worn, like those of the dog, which would inevitably be the case, did their points come in actual contact with the ground; for his claws have not that retractile power which is given to animals of the feline species, by which they are enabled to preserve the sharpness of their claws on the most flinty path. A slight inspection of the fore-feet of the Ant-bear, will immediately convince you of the mistake artists and naturalists have fallen into, by putting his fore-feet in the same position as that of other quadrupeds; for you will perceive that the whole outer side of his foot is not only deprived of hair, but is hard and callous; proof positive of its being in perpetual contact with the ground. Now, on the contrary, the inner side of the bottom of his foot is soft and rather hairy.

There is another singularity in the anatomy of the Ant-bear, I believe, as yet unnoticed in the page of natural history. He has two very large glands situated below the root of the tongue. From these is emitted a glutinous liquid, with which his long tongue is lubricated when he puts it into the ants' nests. These glands are of the same substance as those found in the lower jaw of the woodpecker. The secretion from them, when wet, is very clammy and adhesive, but, on being dried, it loses these qualities, and you can pulverize it betwixt your finger and thumb; so that, in dissection, if any of it has got upon the fur of the animal, or the feathers of the bird, allow it to dry there, and then it may be removed without leaving the least stain behind.

The Ant bear is a pacific animal. He is never the first to begin the attack. His motto may be "Noli me tangere." As his habits and his haunts differ materially from those of every other animal in the forest, their interests never clash, and thus he might live to a good old age, and die at least in peace, were it not that his flesh is good food. On this account, the Indian wages perpetual war against him, and as he cannot escape by flight, he falls an easy prey to the poisoned arrow, shot from the Indian's bow at a distance. If ever he be closely attacked by dogs, he immediately throws himself on his back, and if he be fortunate enough to catch hold of his enemy with his tremendous claws, the invader is sure to pay for his rashness with the loss of life.—*Waterton.*

MEADOW LARK.

SNOW BIRD.

MEADOW LARK.

ALAUDA MAGNA.

[Plate VIII.—Winter Plumage.]

Linn. *Syst.* 289.—*Crescent Stare, Arct. Zool.* 330. *No.* 192.—Latham, iii. 6. *Var. A.*—*Le Fer-a-cheval, ou Merle a Collier d'Amerique*, Buff. iii. *p.* 371.—Catesb. *Car.* i. *pl.* 33.—Bartram, *p.* 290.—*Alauda magna*, Linn. *Syst.* i. *p.* 167. Ed. 10.—Gmel. *Syst.* i. *p.* 801.—*Merula Americana torquata*, Briss. *Av.* ii. *p.* 242. *No.* 15.—(Summer dress.) *Sturnus ludovicianus*, Linn. *Syst.* i. *p.* 290.—Gmel. *Syst.* i. *p.* 802.—Brisson, ii. *p.* 449. 4. *t.* 42. *f.* 1.—Lath. *Ind. Orn.* i. 323.—*Etourneau de la Louisiane.*—Buff. iii. *p.* 192.—*Pl. Enl.* 256.—J. Doughty's Collection.

Though this well-known species cannot boast of the powers of song which distinguish that "harbinger of day," the Sky Lark of Europe, yet in richness of plumage, as well as in sweetness of voice (as far as his few notes extend), he stands eminently its superior. He differs from the greater part of his tribe in wanting the long straight hind claw, which is probably the reason why he has been classed, by some late naturalists, with the Starlings. But in the particular form of his bill, in his manners, plumage, mode and place of building his nest, nature has clearly pointed out his proper family.

This species has a very extensive range; having myself found them in Upper Canada, and in each of the States from New Hampshire to New Orleans. Mr. Bartram also informs me that they are equally abundant in East Florida. Their favourite places of retreat are pasture fields and meadows, particularly the latter, which have conferred on them their specific name; and no doubt supplies them abundantly with the particular seeds and insects on which they feed. They are rarely or never seen in the depth of the woods; unless where, instead of underwood, the ground is covered with rich grass, as in the Choctaw and Chickasaw countries, where I met with them in considerable numbers in the months of May and June. The extensive and luxuriant prairies between Vincennes and St. Louis also abound with them.

It is probable that in the more rigorous regions of the north they may be birds of passage, as they are partially so here; though I have seen them among the meadows of New Jersey, and those that border the rivers Delaware and Schuylkill, in all seasons; even when the ground was deeply covered with snow. There is scarcely a market day in Philadelphia, from September to March, but they may be found in market. They are generally considered, for size and delicacy, little inferior to the quail, or what is here usually called the partridge, and valued accordingly. I once met with a few of these birds in the month of February, during a deep snow, among the heights of the Alleghany, between Shippensburgh and Somerset, gleaning on the road, in company with the small snow-birds. In the States of South Carolina and Georgia, at the same season of the year, they swarm among the rice plantations, running about the yards and out-houses, accompanied by the Killdeers, with little appearance of fear, as if quite domesticated.

These birds, after the building season is over, collect in flocks; but seldom fly in a close compact body; their flight is something in the manner of the grouse and partridge, laborious and steady; sailing, and renewing the rapid action of the wings alternately. When they alight on trees or bushes, it is generally on the tops of the highest branches, whence they send forth a long, clear, and somewhat melancholy note, that, in sweetness and tenderness of expression, is not surpassed by any of our numerous warblers. This is sometimes followed by a kind of low, rapid chattering, the particular call of the female; and again the clear and plaintive strain is repeated as before. They afford tolerable good amusement to the sportsman, being most easily shot while on wing; as they frequently squat among the long grass, and spring within gunshot. The nest of this species is built generally in, or below, a thick tuft or tussock of grass; it is composed of dry grass, and fine bent laid at bottom, and wound all around, leaving an arched entrance level with the ground; the inside is lined with fine stalks of the same materials, disposed with great regularity. The eggs are four, sometimes five, white, marked with specks, and several large blotches of reddish brown, chiefly at the thick end. Their food consists of caterpillars, grub worms, beetles, and grass seeds; with a considerable proportion of gravel. Their general name is the *Meadow Lark;* among the Virginians they are usually called the *Old Field Lark.*

The length of this bird is ten inches and a half, extent sixteen and a half; throat, breast, belly, and line from the eye to the nostrils, rich yellow; inside lining and edge of the wing the same; an oblong crescent, of deep velvetty black, ornaments the lower part of the throat; lesser wing-coverts black, broadly bordered with pale ash; rest of the wing feathers light brown, handsomely serrated with black; a line of yellowish white divides the crown, bounded on each side by a stripe of black intermixed with bay, and another line of yellowish white passes over each eye backwards; cheeks bluish white, back and rest of the upper parts beautifully variegated with black, bright bay, and pale ochre: tail wedged, the feathers neatly pointed, the

four outer ones on each side, nearly all white; sides, thighs, and vent pale yellow ochre, streaked with black; upper mandible brown, lower bluish white; eyelids furnished with strong black hairs; legs and feet very large, and of a pale flesh colour.

The female has the black crescent more skirted with grey, and not of so deep a black. In the rest of her markings, the plumage differs little from that of the male. I must here take notice of a mistake committed by Mr. Edwards, in his History of Birds, Vol. VI. p. 123, where, on the authority of a bird dealer of London, he describes the Calandre Lark (a native of Italy and Russia), as belonging also to North America, and having been brought from Carolina. I can say with confidence, that in all my excursions through that and the rest of the Southern States, I never met such a bird, nor any person who had ever seen it. I have no hesitation in believing that the Calandre is not a native of the United States.

SNOW-BIRD.

FRINGILLA HUDSONIA.

[Plate VIII.]

Fringilla Hudsonia, Turton, *Syst.* i. 568.—*Emberiza hyemalis*, *Id.* 531.—Lath. i. 66.—Catesby, i. 36.—*Arct. Zool. p.* 359, *No.* 223.—*Passer nivalis*, Bartram, *p.* 291.—*Fringilla hyemalis*, Linn. *Syst. Ed.* 10, i. *p.* 183, 30.—J. Doughty's Collection.

This well-known species, small and insignificant as it may appear, is by far the most numerous, as well as the most extensively disseminated, of all the feathered tribes that visit us from the frozen regions of the north. Their migrations extending from the arctic circle, and probably beyond it, to the shores of the Gulf of Mexico, spreading over the whole breadth of the United States, from the Atlantic Ocean to Louisiana; how much farther westward I am unable to say. About the twentieth of October, they make their first appearance in those parts of Pennsylvania east of the Alleghany mountains. At first they are most generally seen on the borders of woods, among the falling and decayed leaves, in loose flocks of thirty or forty together, always taking to the trees when disturbed. As the weather sets in colder, they approach nearer the farm-house and villages; and, on the appearance of what is usually called *falling weather*, assemble in larger flocks, and seem doubly diligent in searching for food. This increased activity is generally a sure prognostic of a storm. When deep snow covers the ground, they become almost half domesticated. They collect about the barn, stables, and other out-houses, spread over the yard, and even round the steps of the door; not only in the country and villages, but in the heart of our large cities; crowding around the threshold early in the morning, gleaning up the crumbs; appearing very lively and familiar. They have also recourse, at at this severe season, when the face of the earth is shut up from them, to the seeds of many kinds of weeds, that still rise above the show, in corners of fields, and low sheltered situations, along the borders of creeks and fences, where they associate with several species of Sparrows. They are, at this time, easily caught with almost any kind of traps; are generally fat, and, it is said, are excellent eating.

I cannot but consider this bird as the most numerous of its tribe of any within the United States. From the northern parts of the district of Maine, to the Ogechee river in Georgia, a distance, by the circuitous route in which I travelled, of more than 1800 miles, I never passed a day, and scarcely a mile, without seeing numbers of these birds, and frequently large flocks of several thousands. Other travellers, with whom I conversed, who had come from Lexington, in Kentucky, through Virginia, also declared that they found these birds numerous along the whole road. It should be observed, that the road sides are their favourite haunts, where many rank weeds that grow along the fences, furnish them with food, and the road with gravel. In the vicinity of places where they were most numerous, I observed the small Hawk, (*Falco sparverius*) and several others of his tribe, watching their opportunity, or hovering cautiously around, making an occasional sweep among them, and retiring to the bare branches of an old cypress, to feed on their victim. In the month of April, when the weather begins to be warm, they are observed to retreat to the woods; and to prefer the shaded sides of hills and thickets; at which time the males warble out a few very low sweet notes; and are almost perpetually pursuing and fighting with each other. About the twentieth of April they take their leave of our humble regions, and retire to the north, and to the high ranges of the Alleghany, to build their nests, and rear their young. In some of those ranges, in the interior of Virginia, and northward, about the waters of the west branch of the Susquehanna, they breed in great numbers. The nest is fixed in the ground, or among the grass, sometimes several being within a small distance of each other. According to the observations of the gentlemen residing at Hudson's bay factory, they arrive there about the beginning of June, stay a week or two, and proceed farther north to breed. They return to that settlement in the autumn on their way to the south.

In some parts of New England I found the opinion

pretty general, that the Snow-bird in summer is transformed into the small Chipping Sparrow, which we find so common in that season. I had convinced a gentleman of New York of his mistake in this matter, by taking him to the house of a Mr. Gautier, there, who amuses himself by keeping a great number of native as well as foreign birds. This was in the month of July, and the Snow-bird appeared there in the same coloured plumage he usually has. Several individuals of the Chipping Sparrow were also in the same apartment. The evidence was therefore irresistible; but as I had not the same proofs to offer to the eye in New England, I had not the same success.

There must be something in the temperature of the blood or constitution of this bird, which unfits it for residing, during summer, in the lower parts of the United States; as the country here abounds with a great variety of food, of which, during its stay here, it appears to be remarkably fond. Or, perhaps, its habit of associating in such numbers to breed, and building its nest with so little precaution, may, to insure its safety, require a solitary region, far from the intruding footsteps of man.

The Snow-bird is six inches long, and nine in extent, the head, neck, and upper parts of the breast, body, and wings, are of a deep slate colour; the plumage sometimes skirted with brown, which is the colour of the young birds; the lower parts of the breast, the whole belly and vent, are pure white; the three secondary quill feathers next the body are edged with brown, the primaries with white; the tail is dusky slate, a little forked, the two exterior feathers wholly white, which are flirted out as it flies, and appear then very prominent; the bill and legs are of a reddish flesh colour; the eye bluish black. The female differs from the male in being considerably more brown. In the depth of winter the slate colour of the male becomes more deep and much purer, the brown disappearing nearly altogether.

SNIPE SHOOTING.

The season for shooting Snipe commences in March, and generally continues until the middle of April, and when the birds are plentiful, affords considerable amusement, and not a little toil to the sportsman.

So soon as the warm and genial influence of approaching spring, begins to revive mankind to activity, after the paralizing effects of winter, then it is that these birds make their appearance among us, while on their journey to the north; and, although poor on their first arrival, soon become fat by means of the rich feeding grounds, which lie adjacent to this city, and are objects of eager pursuit, both by sportsmen and market dealers. The shooting campaign, for the current year, opens on this species of game, and new zest being given for this favourite amusement, by the idleness of winter, multitudes of shooters are ready to take the field, in a general war of extermination, against these innocent visitants, so soon as their approach is known. On all the low grounds, which borders the rivers Delaware and Schuylkill, may be seen, gunners of every age and class, armed with the unwieldy, rusty musket, to the superb double percussion gun; some for the recreative pleasure which the exercise produces, others as a source of profit; and again, those, who wish to while away the tedium of an idle life.

Shooting Snipe dexterously, has always been considered a difficult point to attain, and requires not only excellent judgment, but much deliberation. The silent and rapid manner which this bird springs from the ground, and the zig-zag figure of its flight, oftentimes disappoints expert shots, and puts them in doubt of their proficiency in the science. I have known excellent shots at other objects, miss Snipe five or six times in succession, but it is generally attributable to the common fault of shooting too soon.

In rising from the ground, the Snipe springs to the height of five or six feet, and darts off in a zig-zag manner, at the commencement of which it utters a sound similar to the word *scape*, and after continuing in this way for a distance, perhaps, of twenty yards, directs a straight course, gradually ascending, until it reaches a certain height in the air, when a few circuitous flights are performed, until another spot to settle is fixed upon; this determined, it gradually descends, and when near the earth, drops of a sudden in the grass. Owing to this habit of alighting, many unskilled persons are deceived, thinking it to be the effect of a mortal wound which causes the sudden stop, but on approaching the spot where it settles, to their amazement, find the bird will rise as freely as before.

Our Snipe, although different in appearance from the *Jack*-Snipe of England, is similar to it in habit, especially in this manner of alighting on the ground; and the following anecdote, related by Thornhill, in his Shooting Directory, may not be inappropriately inserted here, as tending to show the disappointment of many, when in pursuit of this game. He says, "a most curious circumstance occurred respecting a Jack-Snipe, that was sprung several times by a Mr. Molloy, formerly a quarter-master of the 64th regiment, while he was quartered at Geneva barracks, Ireland, is worth relating: He regularly, after his duty was done, or if he could possibly obtain leave for a day, used to equip himself for shooting, and always sprung this Jack-Snipe, at which he fired, and followed, and the bird used to pitch so close to him at times, that he was confident he had shot it, and used to run to take it up, when, to his great surprise, it would rise, and fly a little farther; he actually acknowledged he fired, one day, eighteen times at this bird, and, after shooting at it for the whole season, he happened to be crossing the bog it lay in, when he put it up, and exclaiming, "there's my old friend," threw his stick at it, and killed it on the spot; whenever after, any of his brother officers found a Jack-Snipe, they were always sure to say, "there goes *Quarter-master Molloy*."

The proper manner of hunting Snipe is with the wind, as they not only lie much closer for the sportsman, but having great aversion to the wind acting against their feathers, will, immediately after rising, head the wind, and present a convenient cross shot; and should they be plentiful, it is most advisable to hunt them without dogs, as the sportsman can spring them himself with all convenience. It is also important to success, to reserve the fire until the irregularity of their flight is over, which rarely exceeds twenty yards, and this being point blank distance, will enable the shooter to kill his object, not only with greater certainty, but more satisfaction.

At times, the Snipe are exceedingly shy, and difficult to approach, frequently springing up beyond the reach of your shot, and again so tranquil as not to fly until almost trodden upon; satisfactory reasons for this difference have never yet, to my knowledge, been presented, but which, I think, may be accounted for as follows. Snipe, like woodcock, feed more during the night than the day, but more especially moonlight nights, on which occasions their wanderings are more severe and fatiguing, consequently, it will be found, that on days succeeding those moonlight nights, the Snipe, by reason of fatigue and satisfied appetite, become more sluggish and inclined to be dormant. Again, the migration of these birds always takes place during the night season, gradually through the whole month of March, and the early part of April, commencing about twilight in the evening, and subsiding at the same period the next morning, and will perform a journey, at a moderate calculation, of three or four hundred miles at one flight. Now, when the sportsman encounters these birds the day after their migratory flight, they are found to be very tenacious of their resting-place, and quit it reluctantly; nor is it difficult to detect them, for whilst those Snipe which have remained for days and recruited strength, will rise at too great a distance for a successful shot, make their usual circular flight, and depart for some more distant feeding ground, these will spring up only at your feet, fly a short distance, and drop again into the grass, and continue these short flights, until repeated persecution drives them completely off. These birds, after a long flight, will remain in rich feeding ground for a number of days, and until they have satisfied the cravings of hunger, or become sufficiently recruited to continue their migration, when, being disturbed during the day, will make their final move the succeeding night. In this way, sportsmen have often been disappointed, when resorting to Snipe ground, find few, or no birds, where, the day previous, they were in the greatest abundance.

The Snipe are occasionally to be found in swampy thickets, but more generally in open meadows, with a soft bottom, and more or less covered slightly with water, this kind of ground abounds in the neighbourhood of Philadelphia, but since the excavation of the Chesapeake and

Delaware canal, numbers of sportsmen resort thither as a favourite place for shooting Snipe; at times they are scarce even in this place, and then again in vast numbers, so that the indefatigable sportsman is often rewarded for his expense and toil. When this spot was first resorted to, for the purpose of shooting Snipe, I have been informed, that, so great a multitude of these birds have congregated in places, as to rival black-birds in the size of their flocks.

The Snipe pass the middle States by the latter end of April, and reach their places of incubation, in the more northern climate, in the early part of May, where they remain until October, whence they return, and again afford amusement to our sportsmen, during the Indian Summer; at this period they are generally more fat and tender than in the spring, being mostly young birds. They finally return to the southern States, and winter in the marshy and rice grounds, with which those States abound.

Although these birds are strictly migratory, there are instances when they remain with us through both summer and winter, as I have several times shot them in the heat of the former, and the severities of the latter.

In habit, the Snipe is a solitary bird, and performs its journey alone; but, as has been stated before, they concentrate in particularly rich feeding grounds, in such quantities, that when disturbed, their rise is so simultaneous, as to have the appearance of flocks, and they will hover around in large bodies, unwilling to leave the spot, until they either disperse, or settle again in the grass, but their arrival at, and departure from, these places, is solitary. When this game is plentiful, I would advise the young sportsman, by all means, to practice on it in preference to any other; it is clear shooting, no objects interpose to disconcert the mind, and direct it from the game; consequently, there is more time for deliberation. No. 9 shot, is sufficiently large for the purpose, as it requires but a slight wound to bring them to the ground—and one day's exercise with prudence, after these birds, will initiate the beginner into the science of shooting, more completely, than practising a whole week at useless swallows, or sluggish rail.

I.

REPLY TO "SPORTSMAN."

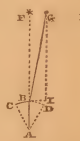
Messrs. Editors,

Your correspondent, the "Sportsman," has evinced so much courtesy in his remarks on my essay on Chesapeake Duck Shooting, that, though differing in sentiment, I feel much pleasure in replying to his "Stricture." With respect to his first observation, on the principle of aiming in advance of a bird, when at a great distance, the necessity of it has been so much an axiom with old duck shooters, that every argument with them would fail in overturning it. I imagine, from the sentiments of your correspondent, that *his* practice has been principally with ordinary game; where the rapidity of flight and distance of object have been so materially different from the case assumed by myself, that a comparison can scarcely be drawn.

With a partridge or woodcock, the nearness of the object, and the comparative slowness of progression, destroy the necessity for any sensible difference in the direction of aim; for, it has been computed that these birds fly at the rate of from thirty to forty feet in a second of time, and being generally shot at within sixty yards distance, the spread of the load will cover all deficiency.

With a bird at eighty or one hundred yards, whose motion is nearly ninety feet in that time, there can be no doubt of the absolute necessity for a certain allowance. Throwing aside the spreading of the shot, and estimating the load but as a single mass like a bullet, the subject assumes a more simple shape, and it is thus I will consider it. If the shooter ceases to move his gun when he begins to pull the trigger, there can be no question of the loss of time even with the most rapid motion of the lock; but I will take the fairest position of the matter, and allow that the gun is still covering the bird when the load is actually at the muzzle. The diagram before us, will assist in explaining the philosophy of the subject.

I will consider A the breech of the gun, which is, for all purposes, sufficiently a point or centre of motion, and B the muzzle. A C the position of the gun when the shooter commences the operation of firing, E the bird at that moment; and taking a course that will bring it when at its nearest point, at a distance of one hundred yards from the person.



We will suppose, although the relative proportions of distance are not accurate in the design, that the process of pulling the trigger, and the passage of the load from the breech to the muzzle, occupies one second of time, and that during that interval, the muzzle has travelled to B, which we will assume as ten feet, the length of the barrel, of course changing the arc, and the bird has arrived at F, or eighty-seven feet beyond E. Allowing the load to be attached to the muzzle, and the same rate of motion continued, it would be under the influence of a power of a momentum of ten feet in a second, and which, in another second would carry it to D. But presuming this momentum was received, and the attachment to the gun destroyed,

Z

the tangential disposition would, of course, place it at I, in the same time. The "Sportsman" must allow, for the sake of his own argument, that the load must remain a sufficient length of time at the muzzle, to receive all the lateral motion of that part, however inappreciable the interval. The contents of the gun, therefore, has received, at the instant of its departure, a certain lateral progression, which there is *nothing* afterwards to increase, and, at the same time, a forward velocity of, we will say as a data, one hundred yards in a second. Whilst the load, therefore, is passing through this space, the bird has arrived at H, which is exactly in a line with the gun, if it had continued the same rate of swing. We have now two forces to consider, a forward one of one hundred yards in a second, and a side one of ten feet in a second, and as all uninfluenced impulses are in straight lines, a course exactly between the two will be the track of the load, and it will reach G, in a line diagonally drawn from B, to a point in a line with I. If it be thought that my *time* is extreme, take any proportion of it, and the result is the same. For instance, consider that one-twentieth of a second is required for a ball to pass one hundred yards, take the one-twentieth of eighty-seven feet, as the progress of the bird, and the same proportion of the advance of the gun, and you will have six inches as the arc for the muzzle, and more than four feet for the bird.

As to the second objection of the "Sportsman," to hearing the sound of the shot strike the bird, I do not recollect to have ever met with a ducker but who believed that a sound that is distinctly heard immediately after the discharge, arose from that cause. When birds, at even a less distance than one hundred yards, are struck, and sufficiently hard to kill instantly, a noise is perceived that can have no other explanation, and I have often closed my eyes to be enabled to determine from this sound alone, the success of the shot. During the sporting of last season, it was a subject of daily conversation with us, and the death of many ducks was successfully predicted by that means alone, and the particular gunner, who struck the bird, was frequently determined, and the fact proven by the examination of the entering pellets, when there was no indication of success, till after all had discharged. Mr. Titian Peale, than whom there cannot be more experienced or philosophical authority, has informed me, that when large animals, as buffalo, elk, or deer, are struck by a ball, and death instantly follows, this sound is distinctly heard, though a much less resounding body than feathers is impinged. A ball fired at an object as a board, or even a solid post, at one hundred yards, can be heard to strike, almost uniformly. The "Sportsman" forgets that this sound must return to the ear at a rate of 1142 feet in a second, so that at one hundred yards, one-fourth of a second must elapse after the blow, before its report, which, allowing the discharge and effect are simultaneous, which they certainly are not, is sufficient to enable this noise to be heard.

Before closing my remarks on the essay which excited the observations of the "Sportsman," I will express my regret at the errors in composition which are self-apparent in it, the piece having been written in haste, and my engagements preventing a subsequent correction.

I. T. S.

ON THE CHOICE OF GUNS.

Messrs. Editors,

In my communication of the 19th of October, 1830, I confined myself to a description of guns adapted principally for field purposes or shooting small game. My object in the present, is to speak of those kinds which are most approved of by the "*Still Shooter*,"* whose object is to kill large game, and at a great distance, such as deer, geese, ducks, &c. There is, however, a diversity of opinion respecting these guns, chiefly growing out of habit, owing to the peculiar notions of many persons, and their mode of hunting. It is notorious, that many a man who has a gun, thinks himself in *possession of the very best in the world*, and his practice confirms him in his opinion, that is, the only one calculated to insure success. With such I am not going to dispute the point, but yield at once to all which they shall insist upon, as undeniable, and true to the very letter.

In selecting a gun for the purpose of killing deer, turkey, wild ducks, &c. I would recommend one weighing from ten to twelve pounds, if single, and twelve to fourteen, if double-barrelled, of seven-eighths calibre, and about three feet three to three feet six inches in length, which is capable of throwing from two to three ounces of shot, of any kind, and which will be found convenient for carrying about. When, however, the object is boat-shooting, a different gun from this, altogether, is required. In the District of Columbia, it is the custom now, to use guns, weighing twenty-five or thirty pounds, of an inch, or an inch and a quarter calibre, from four to five feet in length, carrying from six to eight ounces of shot, and it is even asserted that ten ounces are frequently thrown at once!!! In the winter of 1827–8, a coloured man had been provided with a small piece of cannon, (it could be called

* A still shooter is one who remains stationary at some place, and only, shoots when objects pass him, or who hunts without a dog, and steals upon his game.

nothing else) which weighed about sixty pounds, and was projected over the bow of a little, frail machine, which scarcely deserved the name of a boat, whilst he stretched himself in the bottom and paddled in the direction of the game, which floated in dense masses on the waters of the Potomac. The time chosen by this Nimrod of aquatic celebrity, for carrying on his murderous operations, was night, and being guided chiefly by the noise of the birds, he moved silently along until he conceived that he was at a proper distance to speed the fatal messengers. Experience had made him perfect in his art, his boat was previously trimmed so as to allow his gun to range about one degree above the level of the water; thus equipped, he would direct his piece carefully towards his intended and unsuspecting victims, with his finger on the fatal trigger. He would then arouse them and make them take flight, by kicking the boat with his toes, but no sooner did he hear the noise of their wings, than the work of destruction was done. In one instance, this sable adventurer picked up sixty-three canvass back ducks, part of which he offered for sale the next morning in Washington, the balance having been claimed by the parties who furnished the gun, according to certain stipulations entered into between them and the black. This gun was secured to the boat by a long cord, so that, in case of the upsetting of the boat, it might be found. I did not hear whether the parties alluded to, had used the same precautionary steps in regard to the man, in case he should have fallen overboard and got drowned. By repeated slaughter of this kind, how reasonable it is to imagine, that in a short time, this valuable luxury of the table will entirely disappear, and how salutary would be some law, which should regulate its introduction into market, &c.

Leaving this mode of killing wild fowl to negroes and their *quod companions*, we will return to our former text, and to better associates. Having spoken of those guns best adapted for *sportsmen*, we would merely offer a remark respecting the advantage which the shot gun possesses over the rifle, in the hands of an expert shot, and who is an adept in the art of shooting on the wing, and whenever the backwoodsman can handle the shot gun to the perfection he has managed the rifle, I know that his opinion will coincide with mine, for the execution amongst game, will be proof sufficient to remove the most settled prejudices.

In the first place, his chances are multiplied in proportion to the number of buck and other shot, and it is much easier to move a gun of ten or twelve pounds weight, and keep it in a line with a moving object, than a rifle, which will weigh from fifteen to twenty pounds. With respect to those who may occasionally indulge in aquatic speculations, I would suppose that a piece of twelve or fourteen pounds, single or double, and carrying a charge of three or four ounces, would be sufficiently large for all sportsman-like operations.

A.

A BEAR HUNT.

Messrs. Editors,

A few years since, when a resident of the town of Hancock, Delaware County, State of New York, among my many hunting excursions, I experienced the following Bear Hunt, which, if you think sufficiently interesting for insertion in your Work on Rural Sports, you are welcome to it.

In making hunting excursions, I always preferred the period when the ground was first covered with snow, and before the severity of the weather became so intense as to drive most of the wild animals to their dens, which is more particularly the case with Bears, where there is a scarcity of food; then they retire early to their winter quarters, and remain in a dormant state until the opening of spring. The season, however, to which I allude, afforded so plentiful a supply of beech and chesnuts, that the Bears roamed at large much longer than in ordinary cases, and seemed averse to den, although snow had fallen to a considerable depth.

When this is the case they become exceedingly fat, and with them it is a period of much persecution, as many persons are actuated to pursue them, in consequence of considerable profit being yielded by the sale of their fat, whilst others do it to secure a necessary supply for the winter season. This fat is twofold more rich than lard, and is used in preference to it for various culinary purposes, but more especially for dough-nuts, an article greatly in vogue in newly settled countries, being convenient to carry, and usually adopted by hunters for their daily food, when on the chase.

During the above period, I had a plentiful supply of good dogs; the number varying from five to nine, and most of the smooth cur breed. This description of dogs are much the best for hunting Bears; for, being active and ferocious, they worry their antagonist to such a degree, that he is compelled either to make a stand to defend himself, or take a tree in order to avoid them. Their manner of attack is to seize, and spring back, whenever the Bear attempts to fight, and the moment he runs, seize him again; in this way, they surround him, and, although they cannot vitally affect him, do often compel him to climb a tree, or resort to other measures to rid himself of them.

On the day of the present hunt, I was joined by a very particular friend, and a great huntsman, and we took with us, for our day's sport, nine dogs, and two men to assist leading the dogs—five of these animals were experienced and well broken, but the other four were young, and about, for the first time, to range the forest after Bear. Our first course was direct to a mountain, where, we were confident, we should find Bears; we moved off at a rapid pace, and soon reached our place of destination. This mountain was covered with beech and chesnut trees, and the Bears had visited these so often, that their tracks were numerous, but old; at length we came to a spot where a Bear had been scratching up the snow in search of food, and which he had left only the night previous; we followed his track for about one mile, when our dogs aroused him from his resting place. Our old dogs were under such excellent command, that we kept them constantly by our side, until we started the Bear afresh, when we let them off, in pursuit. Two of the dogs were hounds, and would constantly give tongue, whilst the curs would proceed silently in chase, and keep ahead of the former; and, owing to this circumstance, the Bear was often surprised, because his attention having been attracted by the yelping of the hounds, would, as he thought, keep beyond reach of them, without putting himself to unnecessary speed—when, to his surprise, the silent dogs would often be close at his heels, and coming up to him, would engage in conflict, and stop him; this, we could always tell, as all the dogs would then join in general cry, when we would take the nearest course, by crossing in the direction of the sound.

On coming up to the combatants, we found the Bear, an exceedingly large animal, had already killed a young, and bitten one of the old dogs, so badly, that he could not remove from the *bed*,* but on our approach, he made off again, fighting the dogs as he ran, and showed much aversion to treeing, and would, therefore, enter swamps and windfalls, but being so closely pursued by the dogs, no artifice of his would avail him, and had, at last, recourse to a large tree, where he remained free from his persecutors, who were assembled beneath him barking to but little purpose.

It may, perhaps, be worthy to remark, for the information of those who know but little of these animals, that old Bears seldom tree, to clear themselves of dogs, if there is any possibility of escape without it, and when necessity compels them to this course, they will, on the approach of a human creature, in despite of every obstacle which may oppose them, descend to the ground, and take to flight; but young Bears will climb trees immediately, and often suffer hunters to approach beneath, and shoot them. Knowing the present animal to be an old and formidable antagonist, and judging from the noise of the dogs, that he was in a tree, my companion thought it most advisable to destroy him at once, lest he should kill more of our dogs, as by this time he had disabled another; he accordingly approached with much caution, until within about eighty yards of the tree, in which the Bear had taken refuge, when, with much deliberation, he fired at his head, and, being a first rate shot, I felt confident that the animal would have fallen dead; but, to our great surprise, the shot did not take effect, owing to the ball having struck, and glanced from a small dead limb, which was immediately in front of the Bear's head, but completely unnoticed by my friend. At the report of his rifle, the Bear descended backwards, for about ten feet, then doubled himself in the form of a hoop, and fell to the ground.

It is well known among hunters, that, should an old Bear be surprised on a tree, he will never descend, by sliding down, but, like this Bear, roll himself up and fall, sometimes from a most astonishing height, even forty or fifty feet, in which case he always alights on his rump, and when on the side of a hill, will roll like a hoop to the bottom. I have, in several instances, shot them after such falls, and found the extent of injury received, was a few slight bruises near the root of the tail. Experienced dogs are aware of this stratagem of the Bear, and, so soon as he lets go his hold, they will run from under the tree, to avoid his fall. This plan also, the Bear adopts to clear himself of dogs, as he knows, that should he descend the tree gradually, he must encounter a host of enemies, the moment he reaches the ground. In the present instance, the dogs knew the character of their antagonist, and ran so far from under the tree, that the Bear had recovered from his fall, and ran three hundred yards ere they could overtake him. The battle now began to rage most furiously, and we were alarmed for the fate of our dogs, and endeavoured to shoot him but found it impossible to do so, without endangering some of the dogs. He then laid on his back, and would frequently drag some of the dogs into him, in order to squeeze them to death, but being broad across the chest, failed to effect his purpose; this, the old dogs knew well, and the moment he would seize them, they would close in with his breast, and slip out backwards from him.

Our presence excited the dogs to fight with the utmost

* A *bed* is a term used among hunters, signifying the spot where a Bear makes a stand against his adversaries, and is more particularly applied when the ground is covered with snow, as he generally confines himself to one spot, which is completely beaten down by the belligerents, and varies from ten to twenty feet in diameter. Sometimes the Bear gives battle sitting in an upright posture, and again, while laying on his back; and it frequently occurs, that he succeeds in beating off all his enemies, and will chase them some distance from this spot, but, unless he makes off to some other neighbourhood, will, universally, return again to the bed to wait for a fresh attack.

ferocity, and exceeding courage, for half an hour, but the Bear was an overmatch for them, and we were fearful that he would bite them in pieces, and escape at last, without our being able to get a ball into him. Amongst our dogs was a favourite old dog, we called "Drive," and, without exception, the best dog to hunt I ever saw, and, withal, the most courageous; he had been our companion, both in toil and pleasure, for several years, and his encounters with wild animals were so numerous, that, often has been the time, that we carried him from the field of battle helpless and mangled, for miles, to our homes, but always on recovering, was eager to engage in deadly strife with any monster of the forest. This old dog, in the present battle, had seized the Bear by the back of the neck with so firm a hold, as to disable him, in some measure, from injuring the other dogs. The Bear, however, endeavoured to rid himself of Drive in every possible way, but to no effect; thinking now it would be a good opportunity to despatch him, I resolved to try the virtue of my hunting knife, and approached him with a view of stabbing him, but the Bear immediately broke away from the dogs, and then threw himself on his back again, and when in this position, I stood my rifle against a tree, and attempted to make the fatal stroke, but the Bear anticipated my intention, and met my blow, with a stroke of his paw, with so much force as to knock the knife from my hand to a distance of thirty feet, and then arose, and made a bold push at me, but I showed him a light pair of heels, and being again seized by the dogs, deterred him from further pursuit. We then thought of other means, and commenced cutting large clubs; but whilst engaged at this, the Bear, disrelishing his new enemies, cleared himself of the dogs, which were so disabled by this time, that they could hardly fight more, and made off at full speed. I seized my rifle, and just as he was springing over an old hemlock log, I fired at him, but being afraid of shooting the dogs, I shot too high, and only cut him across the rump as he pitched over the log, this put him to a stand, and he ascended a tree, to the height of about forty feet, when I approached, and shot him through the heart.

We examined the dogs, and found, although badly wounded, they would be enabled to reach home with care and assistance.

A few days previous to the above hunt, I had set a large spring-trap for Bears, made of iron, for the purpose, and acted similar to a spring rat-trap, but with square joints, and two large springs acting against them, with two smaller springs inside of these: beneath the jaws were arranged a number of iron spikes, so that, as soon as the trap sprung, it held its prisoner perfectly secure. These traps usually weighed forty or fifty pounds, to which were appended, by means of chains, cloggs of wood, four or five feet in length, to prevent the caught animal from escaping. We, therefore, at the commencement of this day's chase, had sent our two men to the trap to ascertain, if any animal was caught; and while we were engaged in dressing the Bear we had just killed, these men came to us with information, that a large Bear was caught by the trap, and so securely, that there was no probability of his escaping, as the trap had closed upon him about eight inches above his paw. The day was drawing to its close, and having before us sufficient to employ the balance of time before night set in, we concluded to leave the trapped Bear for another day's excursion, and make arrangements to get home our dogs, in which we succeeded, and had them well provided for, until they would finally recover.

The next morning, several of our neighbours joined us in our excursion after the caught Bear; our number amounted to eight or ten persons, full of glee, and with the prospect of a fine day's sport; armed with but an axe, and one rifle, we sallied forth, with an addition to our list of dogs, after our sable antagonist. We soon reached the scene of our operations, and judged, the Bear must have been entrapped several days, as he was somewhat fatigued; and, during his repeated endeavours to rid himself of the trap, had broken the bone of his leg, so that it held him merely by the skin and sinews. At our approach, however, he hobbled off, and seizing the trap in his mouth, and running on three legs, made considerable progress; but the young dogs soon fastened on him, and fought very handsomely, and in order to give the Bear a better chance to defend himself, we cut him loose from the trap; being thus disencumbered, he boxed the dogs about pretty freely, until an old dog, which we had kept in reserve, seized him by the back of the neck, with so much ferocity, as to compel the Bear to back himself against a large hemlock log, which prevented the dogs from getting behind him, by which means he kept them at a respectful distance. As considerable time had elapsed since we first found him, we began to grow weary, and concluded, that if it was possible to master him, we would bind him and carry him home alive, for a sight to the ladies of our village; and having determined on sport that day, we were unwilling to put an end to it by destroying the Bear, especially as our number warranted the belief that we could take him home a prisoner, or that eight or ten stout men could secure one disabled Bear—but here was the difficulty—how were we to secure him, without danger to ourselves? Various plans were proposed, but none seemed practicable; at last J—, an old hunter, and a large athletic man, proposed the following, which was to cut a long pole, with a large fork at one end, and crawl behind the Bear, and while his atten-

tion was engaged by the dogs, force the fork against the back of his neck, and pin him to the ground, until the rest could secure him. This caused much diversion to the company, as well from the singularity of the plan, as the sincere manner in which it was spoken by J—. He, however, nothing discouraged at their mirth, procured his pole, and, with great gravity, proceeded towards executing his plan. Confident of success, he approached the Bear with much caution, who heeded nothing but his antagonists in front, and was not aware of his new enemy. J— succeeded in reaching the log, on which he mounted, immediately over the Bear, and in the very spot he desired to stand; thus prepared, he made a push at the back of the Bear's neck, with his forked pole, thinking that, so soon as his antagonist felt the pressure, he would counteract it by resistance, and therefore inclined the whole force of his body in that direction; during this time nothing could exceed the mirth of the party, the soberness with which the Bear defended himself, in his upright posture, and the ludicrous appearance of J—, when about yoking the Bear, created a scene of laughter not easily to be described; while some, unable to give vent sufficiently to their merriment, laid down and rolled about in the snow. Bruin, himself, was up to a thing or two, and envious of their mirth at his expense, concluded to turn the joke upon his antagonist, for, just at the moment when J— pressed with all his force against him, instead of resisting the push, threw himself forward, which brought J— from his equilibrium, and tumbled him over the Bear's head, and before he could make another spring, Bruin made fair play at his breech, with a blow so well directed as to remove the seat of his pantaloons completely, and then gave chase with open jaws: this was too much for the risible faculties of the party, who, being completely overcome, were rolling in the snow, convulsed with laughter, and entirely heedless of the situation in which J— was placed, for the Bear was close at his heels, for forty yards, and would inevitably have caught him, had it not been for the old dog, which rushed on and seized the Bear, and brought him to a stand. J—, too, could not help joining in the general mirth, occasioned by his defeat, although pursued, by his inveterate enemy, with a determined spirit of revenge, in despite of his white flag, streaming from behind. This plan having failed, we procured a small sapling, and whilst the battle was raging, placed it across the Bear's back, and, by our weight, pressed him to the earth, when, we succeeded in tying his legs together by withes; we also secured his mouth, for fear that, when ascending or descending hills, he probably would slide along the pole and bite us; having him perfectly secured, we carried him by passing a pole through his legs, to our homes, as a sight to our families, and a trophy of our perseverance. When their curiosity was satisfied, we concluded to take a social glass, and try the effect of rum on Bruin; to treat him with a drink we thought no more than fair, after his rough usage, and accordingly poured down his throat a gill of old New England, when he also, like many others, showed a fondness for the *cretur*, and began to lick his chops for more. We then cut the withes from his legs, to see what effect the liquor produced on him; he soon began to show signs of *beastly intoxication*, as he would shut his eyes, fold himself up, and appear to sleep, but, on touching him with a stick, he would rise, make a jump as far as he could, but no sooner touch the ground than he would lie down and fall to sleep again. We finally put an end to his existence, and distributed his remains among the company; in all probability, we should have kept him alive, had it not been for the loss of his fore-paw, as this was the only injury he had received, being scarcely hurt by the dogs; and it may be worth stating, that old Bears, when fat, and in a wild state, seldom suffer much from dogs, even if numerous. In consequence of the length of their fur, and quantity of fat, the dogs cannot press their teeth into the Bear's flesh, and the extent of suffering on the Bear's part, is only a little worriment from which they soon relieve themselves by climbing a tree.

February 21, 1831. W. W.

HUNTING IN INDIA.

Of all the pleasant modes of travelling in the East, that of riding leisurely in the cool season over your ground, and making diversions to the right or left—as the country seems likely to promise sport—is the most so. Your tent is pitched under some wide-spreading banian tree, or in the midst of a cool grove of mangoes; where it is delicious to repose during the heat of the day—extended luxuriously upon a sofa, when all around are sunk to rest; to smoke a manilla cheroot, and with eyes half-shut to exhale the fragrant clouds, and inhale the cool breeze, which steals through the open doors of the tent. Your dogs seem to enjoy it as much as yourself; they stretch, and yawn, and sigh, and, looking up in your face, beat the ground with their tales with every demonstration of extreme canine luxury; now and then snapping at the mosquitoes that buzz about the tent, and doubtless dreaming of the summer-flies of their own dear land.

I love dogs as much as horses; without them I really do not see how the world could go on. When the sun declines, you put on your straw hat and shoes, and stroll forth into

the woods, with the certainty of getting a shot nineteen times out of twenty.

Never pass a tank without peeping over the mound that surrounds it—you are almost sure of finding wild-fowl there. Often and often have I, in one of these lazy strolls, come suddenly upon hundreds of widgeon and teal; and so impudent were they frequently, that, even after firing at them, the flock would only move into the middle, or to the further end of the tank, if it were a large one.

At this hour the quails and partridges leave the brakes, where they have sheltered themselves during the sultry noon, and feed in the stubbles. Jackals may be seen stealing about the thickets in every direction, and little grey-foxes bolt out before you like rabbits.

The deer also may now be more easily approached whilst intent upon feeding, and a stalking-horse may sometimes be used with success: a bullock would be better, as they are more accustomed to its appearance; but it is surprising what a great dislike Indian cattle entertain for Europeans; and this would often defeat the sportsman's manœuvre.

Nothing is more annoying than, after wasting an hour in endeavouring to approach a herd of antelopes, to see them all start off, bounding up into the air, and kicking their heels at you in scorn—just too, as you were within long gun-shot, and enjoying in anticipation, the sweet currant-jelly and the savoury haunch. Antelope venison is, thought, at the best, but very indifferent; being, generally, hard and stringy; whilst that of the spotted deer is, I think, superior to our own: it is, moreover, far less shy than the startlish gazelle, and the other species of antelope. In pitching a tent, you should be sapient enough to recollect that *the sun never stands still:* I have seen men, even old travellers, soft even to encamp on the then shady side of the tree, and in an hour be exposed to the fiercest influence of the sun; which, under canvas, is no joke: frequently, the scorching heat has compelled me to take refuge under the table, when compelled to encamp in a spot utterly destitute of trees. It was on one of those delightful tropical evenings in February, that I was yawning under an old tamarind tree, under which my tent was pitched, and gazing upon the distant town of Balasore, and the wide prospect which extends from the hills of Orissa to the sea, when a hat-less European came charging up to me at full speed, and in a second I recognized Mr. Patten, then joint judge, and magistrate of the district.

At that time I was not aware that a pack of hounds existed in these wilds; but so it was: and the result of our conference was, that we should unkennel a jackal (would I might say a fox) at day-break.

Before it was light we mounted our prads, and rode out from the residency to a village two miles distant, where a black whipper-in and several doriyas were waiting with the hounds. As the gray dawn was hardly yet perceptible, I had ample time to look over this little pack by torch-light. To home-bred English eyes the turn-out would seem but a poor one: only seven couples and a half were in the field; and, of these, three dogs were curs, a half-bred, between a fox-hound and the common Indian pariah dog. They prove, however, exceedingly useful in worrying the jackals; and, being fast, generally receive most of those severe bites at the finish, which might cow, if not injure, the regular pack.

The remaining six couples were some of the handsomest dwarf fox-hounds I ever saw: one couple of bitches, especially, was such a perfect picture I could not help regretting they had ever been sent to the deadly climate of the torrid zone.

When I saw these hounds, two months afterwards, in the hot season, their condition had fallen off most lamentably; and many of them, I should think, would never get over the rains. The hunting costume of India is rather antique: a cap, round coat, buckskin breeches, and, generally, brown tops, characterise the fox-hunter of Bengal. Some modern innovations have crept in; but, in general, all Orientals are as wedded to ancient *dustoora*, or custom, as John Company is to his monopoly of tea.

The *Judge* was accoutred in this style; and mounted on one of the most perfect brown Arabs ever seen—called (if I remember rightly) *Amesbury*, in honour of Nimrod's hunter of the same name. He had a stable full of some other very fine horses, chiefly Arabs—but Amesbury beat them all. One (Champion) was a noble creature, and so docile, that the *syce* used to bring him into the breakfast-room every morning, when my fair hostess honoured him by supplying bread with her own hand for his unconscionable stomach. Champion, once a good one, had received a wrench in the loins at a big jump, and was then perfectly useless.

Balasore is but a small Civil station, and only four or five sportsmen joined us: one of them, Mr. Matthews, was mounted on a noble chesnut stallion, said to be one of the most perfect desert Arabs ever brought from the coast of Yemen. He was very high for an Eastern horse, and his fiery and lasting vigour seemed almost too much for his rider. That horse was worth any sum.

My kind friend, Mr. Pigou, the Judge of Cuttack (late of Jessore,) who was my fellow-traveller, rode a stout chesnut horse, of dubious breed, but which, though slow, went very well.

We soon found a jackal, and had a sharp burst of a quarter of an hour, over ground full of holes and brambles, as hard as granite, and over fields divided by little banks at

every twenty yards; and these are far more annoying to a British fox-hunter than the ox-fences of Leicestershire, or the stone-walls of the midland counties. They keep you and your horse in a constant fret, and yet never give you a jump; excepting now and then, when you come to some bamboo-fence about eight feet high, which will never break, and your only chance is to shut your eyes, stick in your spurs, and shout the exhilarating war-cry of "Charge!"

We lost this jackal and found another, which gave us a slapping run of about half an hour; my mare had a bad cold, and began to blow; when, luckily for me, the increased heat of the Indian sun made the hounds throw up their noses, and enabled me to retreat with credit, though Mr. Patten's kindness had made a *syce* accompany me with a fresh horse, in case my own should knock up.

At this moment I find that the ship is about to sail—so I must conclude without any more remarks on this gallant little pack; but, please God, hereafter I will renew my Indian reminiscences, if you and your readers are blessed with patience. Mr. James Patten is one of the boldest riders in India—his battered cap proves the frequency of his hair breadth escapes. Once he jumped a tremendous well (an *Indian* one) which might appal Castor himself: his horse's hinder feet almost slipped in, when both must have perished. The best of it is, that he did it in cold blood, for the sake of a *lark*.

I am sorry to add, that Mr. P. has since, with the Calcutta hounds, broken his leg most desperately, in getting over a bank; but I trust that, by this time, he is at it again!—*Sporting Mag.*

ANECDOTE OF A PHEASANT.

Gentlemen,

Observing, in your Cabinet of Natural History, an anecdote respecting the occasional stupidity of the American Grouse, I send you the following extract from my *note book*, which may further illustrate the manners of that interesting bird.

Along the eastern bank of the Hudson river, opposite to the city of Albany, (N. Y.) there lies a sandy, uncultivated, and uninhabited tract of country, of considerable extent. This is covered with dwarf pines, and thick bushes of oak and whortleberry. The sportsman here, not unfrequently, meets with the Grouse, which resort to these barrens, for the small acorns and berries which there abound.

Every hunter knows that the Pheasant, or Grouse, though often shy and cunning, will, when worried by his dog, sometimes exhibit such a degree of stupidity, infatuation, and torpor, as to be caught by the hand. An instance of this singular trait occurred to me some time since.

Just at sun-set, in the early part of October, 18—, on returning home from a ramble in the country with my friend, J. S. on the porch of the Eagle tavern, which is on the opposite bank of the river to the Grouse ground which I have just described, we were much surprised to see a large male pheasant (*Tetrao Umbellus.*) This fine bird was quite motionless, and seemed altogether unconcerned at the noise and crowd of citizens in this frequented and thickly settled portion of the town. We entered the Eagle by another way, and by gently opening the door to the porch, where the Pheasant had lodged himself, we captured him under a hat; though, by some mismanagement, he afterwards, fortunately made his escape.

Having heard the discharge of some fowling-pieces during our walk, we supposed that this Pheasant had been frightened from his usual haunts on the opposite side of the river, and, in his alarm, took refuge here, even under the talons of the *Eagle*.

Wishing you success in your interesting and meritorious attempt to illustrate the Natural History of our country,

I remain, yours truly,

JACOB GREEN.

SPORTING CALCULATION.

1st. In the course of a long day's hunting, it is 10 to 1 in *favour* of a bold and good rider, well mounted, that he meets any accident at all.

2d. Supposing he falls, it is 8 to 1 that either he or his horse is materially hurt.

3d. It is 6 to 1 the horse is hurt, and not the rider.

4th. If the rider is hurt, it is 12 to 1 that a bone is not broken.

5th. It is 20 to 1, if a bone is broken, that the wound is not mortal.

Ergo, $10\times8\times6\times12\times20=115{,}200$

$: 1\times1\times1\times1\times1=1$

And $115{,}200=1$—thus stated, it details:

That he has no fall, is 10 to 1;

That himself or horse is not hurt, 80 to 1;

That it is his horse and not himself, 480 to 1;

That no bone is broken, 5,760 to 1;

That the hurt is not mortal, 115,200 to 1.

Ergo, out of 115,200 persons who go out hunting in the morning, only one is supposed to end his course in that way from the effect of that day's diversion.—*Ann. of Sporting.*

Engraved by T. Naughty.

WOODCOCK SHOOTING.

from Child's [illegible]

WOODCOCK SHOOTING.

[Plate IX.]

There is, perhaps, no sport, in this country, which occupies the attention of the shooter so much as that of hunting Woodcocks; and, as the season approaches which embraces this favourite amusement, much anxiety, preparation, and solicitude, are wasted, in anticipating the pleasure which abundance of this game produces, and, for weeks before this period arrives, the talents of all the gunsmiths are called in requisition by sportsmen, to supply any deficiencies which may be found existing in their stock of accoutrements. This undue eagerness, however, sometimes leads to great vexation and disappointment, and proves to be premature; for, like the instability of most pleasures, the prospect of good shooting is often obscured by the storms of a single night, and those places of favourite resort by gunners, which sometimes yield rich harvests to their perseverance, are frequently rendered birdless by one heavy rain. This contingency attending Woodcock shooting, deters many from pursuing it who are extremely fond of the sport, and who prize it as superior to all others, but which circumstance alone is sufficient to bring it beneath the level of partridge shooting. In Europe, this bird is considered a great luxury, and their scarcity in England enhances their value considerably more in the eye of the sportsman, but seldom affords so much amusement as other species of game: they are, however, in this country, so plentiful, that the season for shooting them, if prudently observed, adds much to enjoyment, and constitutes an era of great importance in the sporting world.

No laws regulating the season for shooting Woodcock have, we believe, ever been enforced, except by the State of New Jersey, which restricts it to that period between the first of July and February; although several cities have so far noticed this game as to prohibit its sale in their market places, except during the above period. Sportsmen, however, in every State, respect the proper season for shooting this bird, and are generally confined to those months: but there are many, who do not bear even the semblance of sportsmen, so unprincipled as never to regard law, either natural, moral, or statute, and destroy this bird indiscriminately whenever it is to be met with, often embracing the season of incubation, when the bird is so tame as almost to be taken by the hand, as more easily sacrificed to their inhuman and unfeeling propensities. In connection with the pleasures attending Woodcock shooting, there are many inconveniences and difficulties, which call into exercise all the energies of the sportsman. Commencing in the heat of summer, he is subject in his excursions to the scorching rays of the sun, and dampness and mud attends his every step, from which by the solary influence, often arises a damp vapour, almost, at times, suffocating, which enervates the system, and serves to create excessive fatigue; it thus becomes a season of toil, pain, and unpleasant retrospection: when, if pursued during the only proper season, in the fall of the year, it would be one of the most delightful periods of enjoyment.

This bird is known throughout the United States, under different names, as the snipe, big snipe, red-breasted snipe, and mud snipe, and, in some parts of the country, through ignorance, is not considered fit to eat, although they are generally held in the highest estimation as an article of luxury, and frequently command an extravagant price; it is in October and November, that the Woodcock is in the best state for the table, but impatience in the sportsman urges him to war against them, so soon as the law will permit it. The favourite places of resort for Woodcocks are low, marshy grounds, swamps, and meadows, with soft bottoms, where cattle have been grazing, although during wet seasons they seek higher land, most generally cornfields, to seek their food in the soft ploughed ground. It is no difficult matter to ascertain the presence of these birds in particular places, as the earth will be found perforated with numbers of holes made by their bills, while searching for worms beneath the surface of the ground.

Throughout the month of July, and part of August, the Woodcocks are to be found in most grounds of the above description, and in seasons of excessive drought, are very numerous on tide water creeks and shores of fresh water rivers—those extensive meadows in the interior of New Jersey, near to Atsion Furnace, and frequently in the marshy flats, overgrown with reeds: they were also found in quantities in the meadows bordering the Cohansey river, in the lower part of Jersey, in 1825, at which place three gentlemen, in the space of about two hours, on a very small spot, killed upwards of forty birds. But though the favourite places of resort for Woodcocks are in the region of streams and muddy bottoms, yet, different from the snipe, they are averse to much water, and a heavy rain will disperse them over a wide extended country, and ground which sometimes produces abundance of this game, is found forsaken by them, the night succeeding a heavy rain.

The Woodcocks, when found in meadow land, are easy birds to shoot, and require but an indifferent shot, and slight wounds to kill them, and are therefore sought after by young sportsmen in preference to other game; for, being exceeding sluggish in their movements, they afford excellent opportunities to the beginner to exercise himself in the science of shooting. When sprung from the ground,

these birds always give warning by a whistling noise with their wings, and seldom rise higher than a man's head, skimming over the ground with a slow and steady flight, to but a short distance, when they settle again in the grass—but their character is entirely changed, when the shooting is confined to bushes and thickets, as it then constitutes one of the most difficult feats to kill them, their course being very indirect and unsteady, and differing altogether from the flight of other game, springing rapidly from the ground, and rising perpendicularly, until they clear the tops of the trees or bushes, when their flight becomes more steady, but out of reach, and it requires much experience and judgment to embrace the proper moment to shoot before they make the twistings and turnings, in order to pass between the trees, for this most generally disconcerts every one who is not an expert shot.

To follow Woodcocks successfuly, two persons should always hunt together, so that, when the birds are sprung, they will be the better able to mark the spot where they settle again; as success depends, in a great measure, on marking them properly, it is advisable for one to walk in the centre of the thicket, while the other keeps outside, as in narrow swamps, the birds will universally dart out of some opening, and fly along the edge, until they determine to settle again, and the chances of killing are twofold in favour of the one outside, besides the opportunities of marking.

In Europe every sport has its particular description of dogs, to which their use is solely applied: thus, there is the stag-hound, and the fox-hound—for hunting hares the grey-hound—for the different vermin, the beagle, harrier and terrier—for grouse, the pointer; for partridges and pheasant, the setter, and for Woodcock the springer, or *cocking spaniel*. In this country, our sportsmen, for shooting purposes, confine themselves to the pointer and setter dogs, and are mostly guided in their choice by taste, rather than judgment, and use them indiscriminately for grouse, pheasant, partridge, woodcock and snipe. The Springer is but little known here, and is, in fact, the only proper dog to hunt Woodcocks, as it never points, but is most assiduous in pursuit, and on the instant of springing the bird, gives warning to its master: but, in the absence of this dog, the setter is undoubtedly preferable to the pointer; the nature of the ground to be hunted over is more suited to his disposition and habits, and being less mindful also of briars and thickets, will not only perform more to the satisfaction of his master, but withstand greater fatigue than the pointer.

The double gun should always be used after this description of game, as the fault of shooting too soon occurs more frequently in cripples, than on any other ground, and success is threefold more in favour of the second discharge than the first fire, as the bird, by this period, has only gained the proper killing distance. Very small shot, say No. 9, is sufficiently large to kill them, there being no American bird of the same magnitude which possesses so frail a skin, and is more easily penetrated.

After shooting at a bird, in case its flight continues, the course, and spot in which it settles, should be particularly marked; as it frequently happens they will fly to a much greater distance with a mortal wound, than otherwise, and many birds are lost to the sportsman, from his neglect in this point.

Persons frequently return from Woodcock shooting unsuccessful, in consequence of not hunting the ground well; too much care cannot, therefore, be employed in beating a thicket, and very slow progress should always be made through high grass, as the tenacity of these birds to their places of repose will subject them to be almost trodden upon without taking wing, and it will be well for the sportsman to halt every few yards, as this will tend to flush them, when constant motion would keep them quiet.

In October and November, the Woodcocks forsake their usual feeding-ground, and are to be found in tall, swampy woods, small streams, overgrown with bushes, and newly cleared land; their favourite food consists of insects, larva of insects, and earth-worms; therefore, when the approaching cold weather drives the latter deep into the ground, they then resort to woods and bush-land, where, beneath the leaves, they glean a subsistence on insects. This is the only proper season to shoot them; they are then fat, and much larger than in July, and generally free from vermin.

In June, they are to be met with in almost every swampy meadow; but their number is generally confined to from two to six; as, however, the season advances, and the young birds mature, the drought drives them to those wet feeding-grounds before mentioned, into which they sometimes concentrate in great numbers. These places are then resorted to by sportsmen, who frequently make most incredible havoc and waste of life among them, sometimes killing such quantities, that before night approaches those birds killed in the morning are putrified. This unnecessary destruction of life should be avoided; it adds nothing to the sportsman's character as a good shot, and most certainly detracts from his feelings of humanity; that number should suffice which may be conveniently kept, and rendered suitable for the table.

The Woodcock is considered a nocturnal bird, and does all its feeding and migratory flights during this season; indeed, its sight is very imperfect in the day time, and the construction of the eye evidently unfits it for the glare of day: hence the reason why it selects, in low bushes and long grass, those sombre retreats from which it never vol-

untarily departs, until twilight approaches. This imperfection in sight is strikingly manifested, when driven from their seclusion, as they seldom make long flights, and are always anxious to settle immediately, as though it was painful to sustain the dazzling light of the sun, and are as likely to rush into danger as to avoid it, frequently approaching the sportsman sufficiently near to be stricken by the hand. The writer himself, during the past summer, while standing beneath the shade of a tree, observed a Woodcock settle within a few feet of him, and actually remained some seconds before it took to flight again; but this apparent stupidity is only attributable to their imperfect vision, in the day time. But no sooner do the shades of evening appear, than they sally forth, from their thousand hiding-places, to seek their food in open glades and meadows. At this time, an expert shot may reap a rich reward to his watchfulness, should he station himself near to some dense swamp, where these birds are making continual ingress and egress.

Often, in his walks at twilight, along the secluded lane or lonely meadow, does the passenger observe an object like a phantom flit before his face, or spring from his path, with a whistling noise, and is lost in the impenetrable gloom which surrounds him:—it is this lonely bird, unable to sustain that light which gives life and gaiety to other birds, now breaking forth from every opening of the woody recess, to enjoy the comfort and protection which night affords, while seeking unmolested the means of sustaining life.

Woodcocks, although migratory, remain frequently with us during the whole year—sometimes, when the streams are covered with ice, and the ground with snow; but their places of resort then, are in cedar swamps, and those springy woods, where the water never freezes, but is constantly oozing from the ground, and it appears remarkable how this bird, whose food consists altogether of worms and insects, should, at this season of the year, find means to sustain life; but Nature, ever provident in her resources, and bountiful to all her offspring, has furnished this bird with a bill whose length and delicacy of touch enables it to penetrate deeply into the earth, and draw from thence its accustomed support.

THE SEA.

To those who are capable of only gazing upon its surface, the ocean is a sublime sight. "The waste of waters," as we are in the habit of calling it—though it be any thing but a waste, girdles the globe from pole to pole, and occupies nearly three-fourths of its surface. When, on some calm and pleasant day, when there is not a cloud to dapple the sky, or a breath to ruffle the waters, we look out from some lone promontory or beetling rock, upon the soft green face of ocean, and see it extending on and on in one glassy level, till it blend its farther blue so softly with that of the air, that we know not which is the sea and which sky, but are apt to fancy that this limpid watery curtain is drawn over the universe, and that the sun, the planets, and the stars, are islands in the same sea in which our own habitation is cast. In the soft but sublime contemplation, we find the mind expand with the subject; the fancy glides off to places more high than the line can measure, more deep than plummet can sound; we feel the link that binds us to creation; and finding it to be fair and lovely, our kindly feelings only are touched, and we exult in the general happiness of that of which we feel that we are a part. If then a vessel should come in sight, with the sun illuminating its canvass, like a beam of light on the blue sea, and moving slow and stately, not seeming to us to be in motion, and yet shifting miles before we can count minutes, how we long to be passengers—to walk upon the waters—to be wafted by the winds—to visit the remotest parts of the earth, without half the effort which is required before the sluggard can turn on his couch. Then, if we linger till the sun declines, and his beams are wholly reflected from the glowing surface, what an excess of brightness! An infinitude of burnished gold, and of burnished gold all living and in motion, stretches out at our feet; and as the reflected light upon the shore wakens a gentle zephyr of the air in that direction, the dimpling water plays in alternate sunshine and shade, as if the luminary had been broken to fragments, and gently strewed along its surface.

But if the elements are in motion, if the winds are up—if the "blackness of darkness," which cloud upon cloud, rolling in masses and roaring in thunder, which answers to the call of the forked lightning, has flung its shadow upon the sea, so as to change the soft green to a dark and dismal raven blue, which gives all the effect of contrast to the spray that dances on the crests of the waves, chafes around the reef, dashes with angry foam against the precipice, or ever and anon, as the fitful blast puts on all its fury, covers the whole with reeking confusion, as if, by the force of the agitation, the very water had taken fire;—if one can stand so as to view the full swell of the tempest-tossed ocean sideways, it is indeed a spirit-stirring sight! The dark trough, between every two ridges, appears as if the waters were cleft in twain, and both a pathway and a shelter displayed, while ridge courses after ridge in eager race, but with equal celerity. Some, indeed, appear to fall in their course, and to be trampled upon by those that are behind. They are

hit by one of those momentary gusts which fall; and where, as Burns expressively has it, the wind is every where blowing

"As 'twould blaw its last,"

it lashes a portion of the surge to a greater elevation than it can bear; or, some bank or hidden rock from below arrests it in its course; and down it thunders in brawling and foam, interrupting the succession, and embroiling its successors in its fate.

Even when seen from the pebbly beach of a lee-shore, the ocean in a storm is a sight both to be enjoyed and remembered. The wave comes rolling onward, dark and silent, till it meets with the reflux of its predecessor, which produces a motion to seaward on the ground, and throws the approaching wave off its equilibrium. Its progress is arrested for a moment; the wall of water vibrates, and as it now meets the wind, instead of moving before it, its crest becomes hoary with spray; it shakes—it nods—it curls forward, and for a moment the liquid column hangs suspended in the air; but down it dashes in one volume of snow-white foam, which dances and ripples upon the beach. There is an instant retreat, and the clean and smooth pebbles, as they are drawn back by the reflux of the water, emulate in more harsh and grating sounds the thunder of the wave.

Here we may see what a wonderful thing motion is. What is so bland and limpid as still water! what substance half so soft and fine as the motionless atmosphere! The one does not loosen a particle of sand: the other—you must question with yourself, and even add a little faith to feeling, before you be quite sure of its existence. But arm them once with life, or with that which is the best emblem and the most universal indication of life, motion, and they are terrible both in their grandeur and their power. The sand is driven like stubble; the solid earth must give way; and the rocks are rent from the promontory, and flung in ruins along its base. Need we, therefore, wonder that the masts and cordage that man constructs should be rent as if they were gossamer, and his navies scattered like chaff?

The grandest scenes, however, are found at those places where former storms have washed away all the softer parts, and the caverned and rifted rocks—the firm skeleton of the globe, as it were—stand out to contend with the turmoiling waters. The long roll of the Atlantic upon the Cornish coast; a south-easter upon the cliffs of Yorkshire, or among the stupendous caves to the eastward of Arbroath; a north-easter in the Bullers of Buchan; or, better still, the whole mass of the Northern ocean dashed by the bleak north wind against the ragged brows of Caithness and Sunderland; those—that especially—are situations in which, if it can be viewed in these islands, the majesty of the deep may be seen. Upon the last, in the acme of its sublimity, one dares hardly look. The wind blows ice; and the spray, which dashes thick over five hundred feet of perpendicular cliffs, falls in torrents of chilling rain; while the vollied stones, which the surges batter against the cliffs, the hissing of the imprisoned air in the unperforated leaves, and the spouting water through those that are perforated, and the dashing and regurgitation of the latter, as it falls in the pauses of the commotion, produce a combination of the terrible, which the nerves of those who are unaccustomed to such scenes can hardly bear.

And yet there is an enchantment—a fascination almost to madness—in those terrible scenes. Mere height often has this singular effect, which is alluded to by the Philosopher of Poets, in his admirable description of Dover cliff:

"I'll look no more;
Lest my brain turn, and the deficient sight
Topple down headlong."

But when the elements are in fury—when the earth is rocking, and the sea and sky reeling and confounding their distinctive characters in one tremendous chaos—when, in all that is seen, the common laws of nature seem to be abrogated, and her productions of peace cast aside, in order that there may be an end of her works, and that the sway of "the Annarch old" may again be universal—the heroism of desperation—that which tempers the soldier to the strife of the field, and the sailor to the yet more terrible conflict on the flood—comes, and comes in its power—and the disposition to dash into the thickest of the strife, and die in the death-struggle of nature, is one of the most powerful feelings of one who can enter into the spirit of the mighty scene.

We leave those who allocate the feelings of men according to the scale of their artificial systems, to find the place of this singular emotion, and call it a good or an evil one, as they choose. But we have been in the habit of feeling and thinking that it is an impulse of natural theology—one of those unbidden aspirations toward his Maker which man feels when the ties that bind him to nature and the earth appear to be loosening, and there remains no hope, but in the consciousness of his God, and of that eternity, the gate of which is in the shadow of death. Thus, amid the fury of the elements, the unsophisticated hopes of man cling to HIM, who "rideth in the whirlwind and directeth the storm."

But beautiful or sublime as the ocean is, according to situation and circumstances, we should lose its value, were we to look upon it only as a spectacle, and were the emotions that it produced to be only the dreams of feeling, however touching, or however allied to religion. To ad-

mire and to feel are both essential and valuable parts of our nature; but neither of them is so essential, as to know. That is the antecedent matter; because by it, and by it only, the admiration and the feeling can be properly directed. The first property of the ocean that strikes our sight, is its vast extent; and the first that addresses our understanding, is the vast extent of its usefulness. The evaporation of water from its surface, cleared from the impurities of the land, and adapted for the promoting of life and fertility, has already been mentioned. But the ocean is also the grand messenger of physical nature: that general law, or phenomenon of the constitution of matter, (for the laws and the phenomena of nature are the same) by which the earth is maintained in its orbit, and has the figure and consistency which it possesses, and by which the objects on its surface preserve their forms and their places,—that simple law occasions the tides of the ocean; and these, by moving in the very directions which an obedience to this law points out, produce currents, by means of which there is a constant circulation of the waters of the ocean through all parts of the earth's surface; and the immediate consequence is an equalization of warmth, by means of which, the extremes, both of heat and cold, are mitigated, and the general fertility and comfort promoted.

AN INQUIRY RESPECTING THE TRUE NATURE OF INSTINCT.

BY OLIVER FRENCH, Esq.

The mighty and various powers of man are wonderfully imaged forth in the sensible objects that surround him; and, in the march of science, such additional evidences are continually elicited, in conformation of this important truth, that we may perhaps be warranted in giving a philosophical assent to the sentiment of the poet,—

> ——That for the Instructed, time will come
> When they shall meet no object but may teach
> Some acceptable lesson to their minds
> Of human sufferings, or of human joy,
> For then shall all things speak of Man.
>
> Wordsworth.

Nature's wide domain indeed exhibits a boundless theatre, in which moral and intellectual agency is ever active and employed;—strikingly manifesting its presence to the contemplative mind, in even the most common operations, the results of which have been denominated fixed laws: for what are these but the operations of such agency producing effects for particular ends and purposes, which ends and purposes are evidently intended to be subservient to the application to the powers of the human mind, in the adaptation of all lower things to the purposes suggested by man's reason in all the various products of the arts and sciences. These rise like a new creation from the apparently chaotic parts of Nature, and their production is strictly comprehended within the universal plan of the Divine Artificer, who well knows how much to do for man, and what to leave within man's province, for the proper exercise of the faculties with which he endows him; and to aid him in which exercise, Nature is thus made to unfold a rich and fertile picture of moral and intellectual qualities.

It would appear that traces of the delineation here alluded to might be found throughout the varied products of Nature; but in the animal kingdom we find a broad and certain basis for induction—the world of instinct, in which the various moral and intellectual powers of man are symbolically reflected, as in a mirror, even to his entrance into a glorious immortality. In this great division of the lower creation, the qualities of foresight, industry, integrity, justice, and order, sociability and mutual aid and protection, self-devotion and magnanimity, are imaged forth with an astonishing fidelity and touch of truth: and in a manner no less astonishing and faithful are displayed the opposites of all these,—improvidence, idleness, dishonesty, injustice and disorder, unsociableness and mutual disregard, selfishness and cowardice.

To the contemplative mind, final causes, natural and moral, are every where multiplied to the view, in the innumerable parts of the great machinery of Creation. How forcibly, in numerous instances, are the destroying passions depicted; and how finely does the picture set off the relative beauty of their opposites—the social virtues, which in the instincts of animals are not less faithfully delineated.

This circumstance is really so striking, that, (if such an inquiry could be entered into a philosophical dissertation) we might be tempted to ask, whether these passions of inordinate self-love, giving birth to offensive violence, are not thus exhibited so as to affect the outward senses, through the medium of ferocious animals, in order to furnish us with the strongest possible perceptions of the nature of such passions in ourselves. But the creatures themselves are incapable of conceiving any thing respecting the nature of the moral and intellectual qualities which they thus exhibit,—to them virtue and vice are nothing: they are indeed but the passive mediums in which those qualities are represented and illustrated, in the language of God in Nature, addressed to the human mind; and they seem to be but as types of things—of the mighty powers, moral and intellectual, which fill the mind of man, who alone is an inhabitant of the moral and intellectual world, as he is of the natural world.

Man was called by the ancients a *Microcosm*, or little

world,—that is, a being whose moral and intellectual powers are represented in the subjects of nature, the utilities and ends of which latter are reflected in him, and, as a final cause, take their rise and origin from him, in the scale of creation: and, judging from all that has been said upon this subject, there can be little doubt, that as all natural things are subservient as means to things moral and intellectual, so the former, as much as possible, would seem to be made the emblems and representatives in which the latter may be contemplated.

I have been led to offer these remarks on the final causes of lower existence, because I consider that they are so connected with the question of instinct, that, taken in a general point of view, they help to determine what sort of limited and subservient powers the brute creation may be expected, *a priori*, to possess.

The above idea it appears very necessary to keep in mind, to prevent us from assigning to brutes, mental attributes above the sphere of their common nature, and as leading us to investigate those causes which alone appear properly and rationally adequate to the production of the wonderful system and order observable in their actions. It is from failing to retain steadily in the mind's view this necessary leading principle, that we are led into erroneous conclusions respecting the powers of the brute mind, and the operative means by which the actions of brutes are effected; which so much resemble the operations of human intellect, that as before observed, they may be said to represent and illustrate them.

On this account, considerable difficulty has been found in drawing a distinct line between the conscious discriminative powers of brutes, and those of human rationality; and in affixing a true character to the mental principles in which the actions of the brute creation originate.

Now it seems demonstrable that brutes are possessed of a limited conscious discrimination and determination; which discrimination and determination do not, however, embrace what is either moral, intellectual, or rational, as regards the consciousness of the creature: but as their actions involve in them causes or powers that are evidently of a moral, intellectual, and rational order, and which powers evidently act upon the mental constitution of brutes by impressing and guiding their conscious powers of discrimination and determination to action, according to the purposes or final causes of their being:—it may, therefore, be justly inferred that the Divine Energy does in reality act, not *immediately*, but *mediately*, or through the medium of moral and intellectual influences, upon the nature or consciousness of the creature, in the production of the various, and, in many instances, truly wonderful actions which they perform.

If it be asked by what intermediate agency the operations of brutes are thus directed;—I reply that it is generally admitted, by a large class of mankind, at least, that superior (yet intermediate) powers of some kind, are in actual connexion with the human mind,—though not leading it blindly, as might be supposed to be the case with regard to brutes;—and if this be admitted, there remains no reasonable ground for denying the connexion and influence of similar powers, (whatever they may be), operating upon and disposing to certain ends the conscious natures of brutes; which natures, if we suppose them destitute of moral and intellectual consciousness, have need of the operation of such powers to direct them. The phenomena of brute action, indeed, are inexplicable upon any other grounds, but these once admitted, there appears to be nothing in the whole circle of instinctive operations which may not be satisfactorily accounted for. I will not even venture a suggestion as to the nature of the intermediate superior powers here alluded to; but their agency, I repeat, is plainly manifest in the conduct of brutes.

Viewed, then, in this light, and explained in this manner, Providence is conspicuous in the operations of brute nature; and it is but reasonable to conclude that the Divine Being does indeed operate, by unseen mediums, of whatever kind they be, as the Great Regulator of the whole.

Facts have undoubtedly occurred to exemplify the operation of such agency in special interferences of Providence, through the medium of the brute mind; of which the following well authenticated instance must be regarded as a very striking one.

At Ditchley, near Blenheim, now the seat of Viscount Dillon, but formerly of the Lees, Earls of Lichfield, is a portrait of Sir Henry Lee, by Jansen, with that of a mastiff dog which saved his life. One of Sir Henry's servants had formed the design of assassinating his master, and robbing the house; but on the night he had intended to perpetrate it, the dog, for the first time, followed Sir Henry up stairs, took his station under his bed, and could not be driven thence; in the dead of the night, the servant, not knowing the dog was there, entered the room to execute his diabolical purpose; but was instantly seized by the dog, and being secured, confessed his intentions. In a corner of the picture are these lines:

> But in my dog, whereof I made no store,
> I find more love than those I trusted more.

What an instance is this to show the operation of a superior moral and intellectual power disposing the inclinations and perceptions of an animal, for a stated end; while the natural volitions of the creature, were at the same time exercised by it in freedom towards the furtherance of this end! Whether we suppose the immediate means made use of to impress the animal's conscious mind, to be that of an ideal

imagery or anticipated view of the intended act, with its accompaniments, the darkness, the silence, &c. &c.—and that when it really did begin to happen—when the man actually entered the room at midnight, the animal seized him as described;—or in whatever way we regard it as having been effected, the operation of an intellectual power is most unequivocal. We cannot account for this cool and dispassionate magnanimity, which renders the brute animal unmindful of itself, while extending its protection, and this with discrimination of circumstances, to man, unless by a directing energy, unseen by itself, acting upon its mind, and disposing it to use its immediate conscious faculties in operating according to a particular dictate; the animal, as to all its conscious faculties and bodily powers, being left in perfect freedom, although thus overruled by a presiding power, of which it is totally unconscious. We cannot otherwise account for the apparently complex nature of brutes, "which," as beautifully observed by Addison, "thus rises above reason, and falls infinitely short of it," and which "cannot be accounted for by any properties of matter, and at the same time works after so odd a manner, that one cannot think it the faculty, *(as regards the creature,* he might have added) of an intellectual being."

According to the view above taken, then, the brute, within the sphere of its consciousness, is in perfect freedom; thus it is by no means an automaton, but gifted with a subordinate freedom of volition, discrimination and action, beneath the moral and intellectual sphere by which it is ruled and governed.

The foregoing, however, it may perhaps be said, is an extraordinary instance of the actions of instinct. In reply to this, the question may be asked,—are not the most common and ordinary instances of instinctive action equally illustrative of an intelligence superior to the conscious faculties of the creature; which intelligence must, therefore, operate upon its conscious perception, and constitute, as it were, the *primum mobile*, actuating and impelling it to the most reasonable and circumstantial course of action that can be conceived, for arriving at the fulfilment of the ends for which it is brought into existence? Does the spider, in the curious act of weaving its web, think within itself, and say, 'I will extend my threads in this order, and connect and tie them together transversely, to secure my web from the rude vibrations of the air; and in the terminations which constitute the central point of my web, I will provide myself a seat, where I may sit and watch what happens, and be ready to seize and envelope every fly that is caught in my trap?—Or does the bee reason and say to itself, 'I will take my flight to such a field, where I know there is plenty of flowers, and I will gather wax and honey from them, and of the wax I will build contiguous cells in a particular arrangement and form, and so disposed, that I and my companions may have free ingress and egress, and in process of time may lay up a large store of honey, sufficient for our necessities during the approaching winter, that we may not starve; and I will help to support, like a good citizen, the political and economical prudence of the community?'

We cannot surely conceive any such process of reflection as this to pervade the consciousness of the creatures, although their acts evidently include it in some way or other; and this I think amounts to a full proof, that reasoning is in no case the effect of instinct, as has been supposed by some philosophers; for it determines that the voluntary powers of animals, may be most forcibly directed to a particular course of action, without any reasonable perception, either of the act or of its consequences, on the part of the animals themselves; and shows that the instinct of animals is governed by the influence of an intelligence, (acting in this case according to an uniform mode or fixed law,) which cannot be ascribed to the animals themselves; and which evidently acts upon them above the sphere of their proper consciousness. The same arguments are applicable to those cases, in which animals appear to act more immediately from the exigency of circumstances, that in these also they are similarly directed; as in the case of the ostrich, an apparently stupid bird, which, in Senegal, where the heat is great, sits only by night, when the coolness of the air would chill the eggs; and in the case of parent birds, when their nestlings are confined in cages, or tied to the nest; in which exigency, the old ones prolong their care, and continue to supply them with food beyond the accustomed period.* It thus appears clearly evident, I think, that animals do not act with a view to consequences, from their own proper consciousness; but that whenever they do so act, it is from a dictating energy operating above the sphere of their consciousness, and disposing them so to do: that the business of mental analysis and extraction, is performed *for* them, as it were, in every instance in which they appear to exhibit proofs of it; and that properly speaking, there is nothing of design attributable to brutes in their actions, but merely a subordinate voluntary principle, and discriminative perception, which may be termed natural, to distinguish it from what is moral, intellectual, and scienti-

* A few years since a pair of sparrows which had built in the thatch roof of a house at Poole, were observed to continue their regular visits to the nest long after the time when the young birds take flight. This unusual circumstance continued throughout the year; and in the winter, a gentleman who had all along observed them, determined on investigating its cause. He therefore mounted a ladder, and found one of the young ones detained a prisoner, by means of a piece of string or worsted, which formed part of the nest, having become accidentally twisted round its leg. Being thus incapacitated for procuring its own subsistence, it had been fed by the continued exertions of its parents. B.

fic; to which latter principles alone design can properly be referred. If the *appearances* of design in the animals be taken as proofs of such design being proper to them, we must be forced to admit that they are possessed of moral, intellectual and scientific reflection: but we might, upon this principle, argue the same thing of the plant, which, when placed in a cellar where but a partial light is admitted, turns itself towards the ray; namely, that as there is the *appearance of design* in the action, we must therefore attribute design to the subject in which we perceive its effects, and thus elevate the vegetable to the intellectual sphere: and we should actually do this, did we not stop short to consider the adequacy of the *apparent* agent to the production of the effect, as we behold it performed.

It becomes necessary, then, to establish a test whereby the operation of the moral, intellectual and scientific powers here alluded to, may be ascertained; and whereby the line of demarcation may be distinctly drawn between man and brute. This test, I conceive, is included in the following propositions; viz. 1st, That moral qualities do not become objective in the minds of brutes; or, that the moral actions which they perform are not reflected upon or contrived by them as such; thus that they possess no moral consciousness, and consequently that no moral design can be attributed to them; and therefore, that so much of moral design as appears conspicuous in their actions must be the effect of moral powers or energies acting upon them in a region of their minds above the sphere of their proper consciousness. 2d, That intellectual and scientific qualities do not become objective in the minds of brutes; or, that the intellectual and scientific actions which they perform, are not reflected upon or contrived by them as such; thus that they possess no intellectual or scientific consciousness, and consequently that no intellectual or scientific design can be attributed to them: and therefore that so much of intellectual or scientific design as appears conspicuous in their actions, must be the effect of intellectual and scientific powers or energies, acting upon them in a region of their minds above the sphere of their proper consciousness.

Admiring and respecting as I do the endeavours of all who are engaged in the promotion of philosophic inquiries, I cannot but think, that in the particular subject before us, too much has been done to confound the natures of man and brute, and to separate both from the Fountain of their existence. Man is what he is, and derives his superiority over the brute creation, from the circumstance that all things whatever become morally and scientifically objective to him; and the brute is what he is, and derives his inferiority, from the total absence of this distinguished and ennobling faculty. It is true that many specious arguments may be and have been advanced to prove that the brutes participate in human rationality, in kind, if not in degree; but the ends which their natures are evidently destined to fulfil, would be, one might imagine, alone sufficient to refute the supposition. For it is but reasonable to conclude, that the conscious powers of the creature will be according to the ends of its existence; and as these ends are in the brute creation neither moral nor scientific, but purely *natural*, and, as regards themselves, only subservient to what is moral and scientific, it thence would follow that they are not possessed in themselves of any moral, intellectual, or scientific conscious powers;—and are therefore merely natural agents of a secondary class, in which such powers are exhibited.

I proceed to consider the first of the foregoing propositions. When we investigate the many and surprising instances in which the operations of the brute creation imply moral intention, reflection, and contrivance, we are at no loss to account for the opinion of that class of philosophers, who have attributed the mental inferiority of brutes to the mere want of adequate bodily organs; nevertheless, the intellectual consciousness of man shrinks from the acknowledgment that in one common principle of life originate the actions of man and brute: and that brutes, as to their mental constitution, are thus, as it were, "human imps lopt off from the common stock of intellect and rationality." There is something which seems powerfully to oppose the sentiment of sharing those high endowments with creatures of so inferior a nature; and which irresistibly leads us seriously to examine the arguments which may be offered to prove that moral and intellectual powers *reign over the conscious perception of the brute*, and guide it to its proper exercise of those lower faculties, which it is left in freedom to use. The bee, we say, is a perfect political moralist, with respect to its actions, which evince the strictest attention to the principles of order and economy, for the purposes of the establishment and preservation of a community; yet it is totally ignorant and unconscious of the very principles which it is so assiduous in the practice of;—not a ray of moral perception or consciousness can be attributed to it in a proper sense; it is, on the contrary, totally destitute of the means of discerning or reflecting upon the nature or order of the ends it is instrumental in accomplishing, through the medium of its subordinate voluntary perceptions and powers.—Although it is in the habit of exercising the most accurate science and means, for the fulfilment of these ends, it yet cannot look down with an approving or disapproving perception upon the region or sphere of its natural powers; it evidently has no perception of any moral superiority in itself over the most vulgar worm that crawls. But if brute creatures were capable of moral consciousness, they would be capable of elevation in

the scale of being; and this little insect, the bee, judging from its actions, would, were it capable of that species of consciousness, not only rank above most of the larger classes of animals, but would, on the score of fidelity and integrity, put human nature to the blush.

Were it not that much has been said in favour of the alleged moral consciousness of brutes, it might perhaps be impertinent to proceed further in the endeavour to disprove it; but so strong are *appearances* in its favour, that, although we deny the affirmative in the abstract, by an unequivocal assent to the proposition, that brutes are not accountable beings; yet we are too ready to admit it in particular instances, in which we are wont to ascribe a moral consciousness to the particular moral action we see performed by an animal. There is a strong tendency to mistake the cause instrumental for the cause principal, in this as in other cases; by which we are insensibly led to assign the sum total of the attribute to the visible agent, without stopping to consider further of the matter. Thus gratitude, which is a moral quality in man, is thought to be moral also in the dog; but surely no one, upon mature consideration of the subject, will imagine that the dog reflects on the inclination or desire he feels to act in a manner which we view as grateful, and that he is pleased with the survey and reflection;—that the moral quality of his actions becomes *objective* to him;—and yet this is absolutely necessary in order to constitute a *moral consciousness;* for, to effect this, it is not only necessary that the action be outwardly, or in effect moral, but that this moral action be reflected upon as such, in order that its moral quality may be thus perceived and felt. Moral consciousness can only be produced by the moral quality of the action becoming *objective*—by its being reflected upon from a superior eminence, and in a superior light,—by a soul within and above the lower, animal, or natural mind. But that brutes do not possess this higher conscious faculty, or soul, is made evident by this;—that if a particular individual of a species did possess it, such individual would be necessarily raised by it, as to its nature, which does not, in any case, occur. Thus, with respect to the gratitude and fidelity of the dog, no greater *apparent* moral sagacity can be exercised by any animal; yet being totally unable to contemplate his gratitude or fidelity in the abstract, as objects of a superior perception and consciousness, those virtues are to him as if they existed not:—to man alone this moral consciousness is proper, to the animal it is absolutely a nonentity; he is not in the smallest degree more moral on account of his apparent moral qualities, for they are indeed only *apparently* his own, because they do not reach down, if I may be allowed the expression, to the seat of his proper consciousness; but consist in powers or energies which act above it: he possesses an *apparent*

moral sagacity, but without any moral consciousness or perception concerning it. To make this plain by an example: the dog, if he saves his master from drowning, or preserves his life in any more remarkable manner, such as that in the instance we have before related, reflects not upon any moral nobleness or disinterestedness in the action; he is not at all the more refined for having performed an action, which, morally considered, would tend to raise his nature; on the contrary, he lives on as before, like the rest of his canine brethren, in no respect more elevated in the scale of being; and yet it is certain that in this action his highest natural powers of proper volition, and mental discrimination and comparison, which we may term moral sagacity, have been brought into full exercise.

But it will, perhaps, be objected, that animals experience delight in the exercise of moral qualities, as such; the dog, for instance, in gratitude. I answer, that every animal must necessarily have a delight annexed to that exercise of its powers by which it fulfils the end of its being: and the dog, as the natural guardian of man, has natural inclinations implanted in him, for the purpose of rendering him such; but his delight in the exercise of the inclinations, even when they are directed to moral acts, is purely *natural*, and in no wise *moral;* for, as already observed, no one in this case will imagine that the dog either reflects upon his gratitude, or is pleased with it as a moral quality. On the contrary, it is plain that the animal's delight is solely owing to its conscious mind being determined to the exercise of its natural qualities or inclinations, which are those of morally unconscious obedience and friendship to man; this being the end for which he is created.

The horse, who in his aptitude for war, discovers a quality necessary to render him instrumental in redressing the injuries of man, is characterised as an emulous and a generous animal; yet neither generosity nor emulation, considered as moral qualities, are objects of reflection to him; if they were, miserable indeed would be the fate of the devoted charger, whose latter existence is spent in the metamorphosis of a poor, patient, unpitied hack. But in the adorable economy of the Creator, it is provided that the sufferings of this noble animal shall be natural merely: he is incapable of being made conscious by reflection, either of the generosity, the emulation, or the pride, which his actions may have exhibited: although he has shown them all, they have not become *objective* to him, inasmuch as he is unfurnished with a morally conscious soul, by which alone this could be effected; and it is happy for him that neither glory nor emulation can be attributed to him, otherwise than as the unconscious subject in which those high qualities are exhibited.

The mutual fidelity between the sexes, observable in

doves and other birds, forms a distinguished feature in moral instinct; yet we cannot suppose that the virtue of chastity or of conjugal fidelity is at all intended by the creature, or attributable to it; although its actions are precisely the same as if such moral end were contemplated and intended by it: the polygamous species, indeed, have a claim equally as good as the monogamous, to the virtue of chastity, *as far as regards their own conscious nature.* But surely there must be moral powers which act upon and guide the natures of animals in order to produce these effects, while the creature is accessary, in apparent freedom, and unconscious of the power thus exerted on it; the wonderful exhibition of conjugal and social affections in some species of marine animals, in the *Trichechi Boreales*, for instance, is altogether superior to what can be explained upon any other principles; they will die in protecting their mates and each other. In their manners they are peaceable and harmless, bearing the strongest attachment to each other; but when attacked, some will strive to overset the boat, by going beneath it; others fling themselves on the rope of the hook by which their comrade is held, and endeavour to break it; while others again make efforts to wrench the instrument out of the body of their wounded companion: none desert him, but persist in their courageous efforts for his rescue, even to the last! Their attachment to their mates is, if possible, still more astonishing, and cannot be contemplated without exciting the most vivid sympathy and admiration. It is indeed the most perfect lesson of fidelity and heroic devotion. If in this case we could suppose the creatures capable of reflecting upon the nature of their actions, which are the evident results of a moral influence, what must we think of them?—or rather, what must we not think of them? For it is to be observed, that this conduct is *adapted to circumstances*, and discovers an *apparent rational discrimination*, as well as an *apparent moral consciousness*, in the means employed by the creatures towards the accomplishment of the ends which the exigency suggests.

The controlling energies which direct the limited conscious powers of brute creatures to particular ends, are wonderfully displayed again in the economy of the cuckoo, which lays its eggs in the nest of the hedge-sparrow, and in those of other small birds; these birds, so far from molesting the young intruder,—who, in a singularly curious manner, expels its companions, the small birds' progeny, from the nest, in order that itself may be exclusively and adequately fed by the parents,—feed and cherish it, till it arrives at nearly its full growth; that is, until it is four or five times the size of the foster-parents. The cuckoo, as if conscious that one of her overgrown nurslings would be quite sufficient for the hedge-sparrow or wagtail to attend to and provide for, although she lays several eggs, deposits them in as many strange nests, belonging to these little birds; for she never builds herself: she acts, in fact, as if she calculated exactly what should and what would be done by others, for the rearing of her progeny. Another very curious circumstance noticed by Dr. Jenner, in connection with his remarks on the natural history of the cuckoo, is the power exercised by birds,—which, he says, may arise from "*some hidden cause in the animal economy*,"—either of retarding or of accelerating the production of their eggs, according to circumstances. Moral and intellectual design and active energy, above the conscious faculties of the creature, is surely evident in all this; for the creature is not a mere piece of mechanism, but has a manifest conscious freedom in the performance of its peculiar natural acts; but which freedom is thus as manifestly controlled by superior influences, of which it is unconscious. How, otherwise, can we possibly account for the incessant endeavours of the young cuckoo to dislodge its fellow inmates of the nest, while, as yet, it has scarcely extricated itself from the egg: it cannot reflect upon the necessity of its operations, either for ultimate preservation, or for present convenience; yet it acts as if it did, and takes the most effectual means for the accomplishment of those ends. Will those who attribute design to such actions, say, that the design of taking the immediate steps necessary for the preservation of the creature can reside within its own consciousness? It surely cannot.—The final purposes which are the primary motives of its actions, are far above what it can either conceive or survey; otherwise the cuckoo must indeed be a "*rara avis in terris*," a feathered philosopher of no mean or despicable talent.

One of the strongest instances of apparent moral sagacity, is that well-known one recorded of the elephant, which is said to have taken place in Delhi. An elephant having killed his Cornac, or governor, it is related that the man's wife, in despair, threw her two children before the animal, saying, "Now you have destroyed their father, you may as well put an end to their lives and mine,"—upon which the animal, relenting, and taking up the biggest of the children with his trunk, placed him upon his neck, and having thus adopted him for his Cornac, would never afterwards permit any other person to mount him. In this case we cannot suppose the animal to have reflected upon the deed of slaughter he had committed as *wrong*, nor upon the act of atonement or reconciliation as *right*, without making him an accountable agent; there are, however, the strongest possible features of right and wrong, in the two acts and their attendant circumstances, which must unquestionably belong to an agency above the proper consciousness of the creature. For we have here a case of

moral exigency, and also of reasoning and intellectual exigency; so much of moral and intellectual motive adapted to the circumstances and moral requirement of the case, that if the cause principal be referred to any power within the consciousness of the creature, we must inevitably pronounce it to be a moral and intellectual being. But surely we shall not assert this from the mere appearance of the thing, and without reference to the general quality of the animal's nature *as a whole*, which clearly, and for the reasons I have already dwelt upon, marks its limit, and designates it to be neither moral nor intellectual as to its proper consciousness;—thus not at all so in itself, but only apparently so, by being acted upon by some power or agency above the stream of its consciousness; and which agency must unquestionably be of a moral and intellectual character, or it never could impel the animal to the exercise of those powers of which it is conscious, in the performance of actions possessing the strongest possible moral characteristics. *(To be Continued.)*

DWARFS.

Among the varieties of nature in the human species, we may reckon Dwarfs and Giants. Deceived by some optical illusion, the ancient historians gravely mention whole nations of pigmies as existing in remote quarters of the world. The more accurate observations of the moderns, however, convince us that these accounts are entirely fabulous.

The existence, therefore, of a pigmy race of mankind, being founded in error or in fable, we can expect to find men of diminutive stature only by accident, among men of the ordinary size. Of these accidental dwarfs, every country, and almost every village can produce numerous instances. There was a time when these unfavourable children of Nature were the peculiar favourites of the great, and no prince, or nobleman, thought himself completely attended, unless he had a dwarf among the number of his domestics. These poor little men were kept to be laughed at, or to raise the barbarous pleasure of their masters, by their contrasted inferiority. Even in England, as late as the time of King James the First, the court was at one time furnished with a dwarf, a giant, and a jester. These the king often took a pleasure in opposing to each other, and often fomented quarrels among them, in order to be a concealed spectator of their animosity.

It was in the same spirit that Peter of Russia, in the year 1710, celebrated a marriage of dwarfs. This monarch, though raised by his native genius far above a barbarian, was, nevertheless, still many degrees removed from actual refinement. His pleasures, therefore, were of the vulgar kind; and this was among the number. Upon a certain day, which he had ordered to be proclaimed several months before, he invited the whole body of his courtiers, and all the foreign ambassadors, to be present at the marriage of a pigmy man and woman. The preparations for this wedding were not only very grand, but executed in a style of barbarous ridicule. He ordered, that all the dwarf men and women, within two hundred miles, should repair to the capital; and also insisted, that they should be present at the ceremony. For this purpose, he supplied them with proper vehicles; but so contrived it, that one horse was seen carrying a dozen of them into the city at once, while the mob followed shouting and laughing from behind. Some of them were at first unwilling to obey an order, which they knew was calculated to turn them into ridicule, and did not come; but he soon obliged them to obey; and, as a punishment, enjoined that they should wait upon the rest at dinner. The whole company of dwarfs amounted to seventy, beside the bride and bridegroom, who were richly adorned, and in the extremity of the fashion. For this company in miniature, every thing was suitably provided; a low table, small plates, little glasses, and, in short, every thing was so fitted, as if all things had been dwindled to their own standard. It was his great pleasure to see their gravity and their pride; the contention of the women for places, and the men for superiority. This point he attempted to adjust, by ordering that the most diminutive should take the lead; but this bred disputes, for none would then consent to sit foremost. All this, however, being at last settled, dancing followed the dinner, and the ball was opened with a minuet by the bridegroom, who measured exactly three feet two inches high. In the end matters were so contrived, that this little company, who met together in gloomy pride, and unwilling to be pleased, being at last familiarized to laughter, joined in the diversion, and became, as the journalist tells us, extremely sprightly and entertaining.

But the most complete history of a dwarf is preserved by M. Daubenton, in his Natural History. This dwarf, whose name was Baby, was well known, having spent the greatest part of his life at Luneville, in the palace of Stanislaus, the titular king of Poland. He was born in the village of Plaisne, in France, in the year 1741. His father and mother were peasants, both of good constitutions, and inured to a life of husbandry and labour. Baby, when born, weighed but a pound and a quarter. We are not informed of the dimensions of his body at that time, but we may conjecture they were very small, as he was presented on a plate to be baptized, and for a long time lay in a slipper. His mouth, although proportioned to the rest of his body,

was not, at that time, large enough to take in the nipple; and he was, therefore, obliged to be suckled by a she-goat that was in the house; and that served as a nurse, attending to his cries with a kind of maternal fondness. He began to articulate some words when eighteen months old; and at two years he was able to walk alone. He was then fitted with shoes that were about an inch and a half long. He was attacked with several acute disorders; but the small-pox was the only one which left any marks behind it. Until he was six years old, he ate no other food but pulse, potatoes, and bacon. His father and mother were, from their poverty, incapable of affording him any better nourishment; and his education was little better than his food, being bred up among the rustics of the place. At six years old he was about fifteen inches high; and his whole body weighed but thirteen pounds. Notwithstanding this, he was well proportioned and handsome; his health was good, but his understanding scarcely passed the bounds of instinct. It was at that time that the king of Poland, having heard of such a curiosity, had him conveyed to Luneville, gave him the name of Baby, and kept him in his palace.

Baby, having thus quitted the hard condition of a peasant, to enjoy all the comforts and the conveniences of life, seemed to receive no alteration from his new way of living, either in mind or person. He preserved the goodness of his constitution till about the age of sixteen, but his body seemed to increase very slowly during the whole time; and his stupidity was such, that all instructions were lost in improving his understanding. He could never be brought to have any sense of religion, nor even to show the least signs of a reasoning faculty. They attempted to teach him dancing and music, but in vain; he never could make any thing of music; and as for dancing, although he beat time with tolerable exactness, yet he could never remember the figure, but while his dancing-master stood by to direct his motions. Notwithstanding, a mind thus destitute of understanding was not without its passions, anger and jealousy.

At the age of sixteen, Baby was twenty-nine inches high; at this he rested; but having thus arrived at his acme, the alterations of puberty, or rather, perhaps, of old age, came fast upon him. From being very beautiful, the poor little creature now became quite deformed; his strength quite forsook him; his back bone to bend; his head hung forward; his legs grew weak; one of his shoulders turned awry, and his nose grew disproportionably large. With his strength, his natural spirits also forsook him; and, by the time he was twenty, he was grown feeble, decripid, and marked with the strongest impression of old age. It had been before remarked by some, that he would die of old age before he arrived at thirty; and, in fact, by the time he was twenty-two, he could scarcely walk a hundred paces, being worn with the multiplicity of his years, and bent under the burthen of protracted life. In this year he died; a cold, attended with a slight fever, threw him into a kind of lethargy, which had a few momentary intervals; but he could scarcely be brought to speak. However, it is asserted that in the last five days of his life, he showed a clearer understanding than in his times of best health: but at length he died, after enduring great agonies, in the twenty-second year of his age.

Baby, it is evident, was a creature calculated rather to excite pity or disgust than any other feeling,—a being as stunted in mind as in body. But to these diminutive beings Nature does not always forget to give intellectual faculties. Jeffery Hudson, to whom Buffon alludes as the dwarf of the English court, was a brave and intelligent man. He killed, in a duel, Mr. Cutts, who had insulted him; and he served as a captain in the royal army. In modern times, we have seen an instance of a dwarf possessed of every mental and personal accomplishment. Count Borulawski was the son of a Polish nobleman attached to the party of King Stanislaus, and who lost his property in consequence of that attachment. His father had six children, three dwarfs, and three of the ordinary stature; and it is a singular circumstance, that they were born alternately, a big and a little one. The count's youngest sister, who died at the age of twenty-three, was of a much more diminutive size than he was. He grew till he was thirty, when he was three feet two inches in height. The proportions of his figure were perfectly correct, which is rarely the case with dwarfs, and his look was manly and noble. His manners were full of grace and politeness; his temper was good; and he possessed a lively wit, united with an excellent memory and a sound judgment. Till the age of forty-one, he lived, in the enjoyment of perfect health, and of all the comforts of life, under the patronage of a lady who was a friend of the family. He then married a lady, of the middle size, by whom he had three children, none of whom were dwarfs. To procure the means of subsistence for his family, he at first gave concerts in the principal cities of Germany; on which occasions he played upon the guitar, of which instrument he was a perfect master. At Vienna he was persuaded to turn his thoughts to England, where it was supposed that the public curiosity would in a little time benefit him sufficiently to enable him to live independent in a country so cheap as Poland. Borulawski accordingly visited England, where he was admired, and extensively patronized, by the nobility and gentry. He exhibited himself in most of the principal cities and towns, and wherever he went he gained friends. Borulawski died a few years since. He published his own Memoirs. *Buffon.*

from Nature and on Stone by T. Doughty

GOOSANDER. GOLDEN EYE.

GOOSANDER.

MERGUS MERGANSER.

[Plate X.—Male.]

L'Harle, Briss iv. *p.* 231. 1. *pl.* 22.—Buff. viii, *p.* 267. *pl.* 23.—*Arct. Zool. No.* 465.—Lath. *Syn.* iii. *p.* 418. *Mergus Merganser*, Gmel. *Syst.* i. p. 544. *No.* 2.—Lath. *Ind. Orn.* p. 828, *No.* 1.—*Le Harle*, Buff. *Pl. Enl.* 951, male.—*Grand Harle*, Temm. *Man d'Orn.* p. 881.—*J. Doughty's Collection.*

This large and handsomely marked bird belongs to a genus different from that of the *Duck*, on account of the particular form and serratures of its bill. The genus is characterised as follows: "*Bill* toothed, slender, cylindrical, hooked at the point; *nostrils* small, oval, placed in the middle of the bill; *feet* four toed, the outer toe longest." Naturalists have denominated it *Merganser*. In this country, the birds composing this genus are generally known by the name of Fishermen, or Fisher ducks. The whole number of known species amount to only nine or ten, dispersed through various quarters of the world; of these, four species, of which the present is the largest, are known to inhabit the United States.

From the common habit of these birds in feeding almost entirely on fin and shell fish, their flesh is held in little estimation, being often lean and rancid, both smelling and tasting strongly of fish; but such are the various peculiarities of tastes, that persons are not wanting who pretend to consider them capital meat.

The Goosander, called by some the Water Pheasant, and by others the Sheldrake, Fisherman, Diver, &c. is a winter inhabitant only of the seashores, fresh water lakes, and rivers of the United States. They usually associate in small parties of six or eight, and are almost continually diving in search of food. In the month of April they disappear, and return again early in November. Of their particular place and manner of breeding, we have no account. Mr. Pennant observes that they continue the whole year in the Orknies, and have been shot in the Hebrides, or Western islands of Scotland, in summer. They are also found in Iceland and Greenland, and are said to breed there; some asserting that they build on trees; others that they make their nests among the rocks.

The male of this species is twenty-six inches in length, and three feet three inches in extent, the bill three inches long, and nearly one inch thick at the base, serrated on both mandibles; the upper overhanging at the tip, where each is furnished with a large nail; the ridge of the bill is black, the sides crimson red; irides red; head crested, tumid, and of a black colour glossed with green, which extends nearly half way down the neck, the rest of which, with the breast and belly, are white tinged with a delicate yellowish cream: back and adjoining scapulars black; primaries and shoulder of the wing brownish black; exterior part of the scapulars, lesser coverts, and tertials white; secondaries neatly edged with black, greater coverts white, their upper halves black, forming a bar on the wing, rest of the upper parts and tail brownish ash: legs and feet the colour of red sealing wax; flanks marked with fine semicircular dotted lines of deep brown; the tail extends about three inches beyond the wings.

This description was taken from a full plumaged male. The young males, which are generally much more numerous than the old ones, so exactly resemble the females in their plumage for at least the first, and part of the second year, as scarcely to be distinguished from them; and what is somewhat singular, the crests of these and of the females are actually longer than those of the full grown male, though thinner towards its extremities. These circumstances have induced some late Ornithologists to consider them as two different species, the young, or female, having been called the *Dun Diver*. By this arrangement they have entirely deprived the Goosander of his female; for in the whole of my examinations and dissections of the present species, I have never yet found the female in *his* dress. What I consider as undoubtedly the true female of this species, is figured beside him. They were both shot in the month of April, in the same creek, unaccompanied by any other, and on examination the sexual parts of each were strongly and prominently marked. The windpipe of the female had nothing remarkable in it; that of the male had two very large expansions, which have been briefly described by Willoughby, who says: "It hath a large bony labyrinth on the windpipe, just above the divarications; and the windpipe hath besides two swellings out, one above another, each resembling a powder puff." These labyrinths are the distinguishing characters of the males, and are always found even in young males who have not yet thrown off the plumage of the female, as well as in the old ones. If we admit these Dun divers to be a distinct species, we can find no difference between their pretended females and those of the Goosander, only one kind of female of this sort being known, and this is contrary to the usual analogy of the other three species, *viz.* the *Red breasted* Merganser, the *Hooded* and the *Smew*, all of whose females are well known, and bear the same comparative resemblance in colour to their respective males, the length of crest excepted, as the female Goosander we

have figured bears to him. Having thought thus much necessary on this disputed point, I leave each to form his own opinion on the facts and reasoning produced.

GOLDEN-EYE.

ANAS CLANGULA.

[Plate X.]

Le Garrot, Briss. vi. *p.* 416. 27. *pl.* 37. *fig.* 2.—Buff. ix. *p.* 222.—*Arct. Zool. No.* 486.—Lath. *Syn.* iii. *p.* 535.—*Le Garrot, Pl. Enl.* 802.—*Morrillon, Arct. Zool.* ii. *p.* 300. *F.*—*Br. Zool. No.* 276, 277.—Lath. *Supp.* ii. *p.* 535, *No.* 26,—*Ind. Orn. p.* 867, *No.* 87; *A. glancion, Id. p.* 868, *No.* 88.—Gmel. *Syst.* i. *p.* 523, *No.* 23; *Id. p.* 525, *No.* 26.—Temm. *Man. d'Orn.* i. *p.* 870.—Bewick, ii. *p.* 330.—*J. Doughty's Collection.*

This Duck is well known in Europe, and in various regions of the United States, both along the seacoast and about the lakes and rivers of the interior. It associates in small parties, and may easily be known by the vigorous whistling of its wings, as it passes through the air. It swims and dives well; but seldom walks on shore, and then in a waddling awkward manner. Feeding chiefly on shell fish, small fry, &c. their flesh is less esteemed than that of the preceding. In the United States they are only winter visitors, leaving us again in the month of April, being then on their passage to the north to breed. They are said to build, like the wood duck, in hollow trees.

The Golden-eye is nineteen inches long, and twenty-nine in extent, and weighs on an average about two pounds; the bill is black, short, rising considerably up in the forehead; the plumage of the head and part of our neck is somewhat tumid, and of a dark green with violet reflections, marked near the corner of the mouth with an oval spot of white; the irides are golden yellow; rest of the neck, breast, and whole lower parts white, except the flanks, which are dusky; back and wings black; over the latter a broad bed of white extends from the middle of the lesser coverts to the extremity of the secondaries; the exterior scapulars are also white; tail hoary brown; rump and tail coverts black; legs and toes reddish orange; webs very large, and of a dark purplish brown; hind toe and exterior edge of the inner one broadly finned; sides of the bill obliquely dentated; tongue covered above with a fine thick velvetty down of a whitish colour.

The full plumaged female is seventeen inches in length, and twenty-seven inches in extent; bill brown, orange near the tip; head and part of the neck brown, or very dark drab, bounded below by a ring of white; below that the neck is ash, tipt with white; rest of the lower parts white; wings dusky, six of the secondaries and their greater coverts pure white, except the tips of the last, which are touched with dusky spots; rest of the wing coverts cinerous, mixed with whitish; back and scapulars dusky, tipt with brown; feet dull orange; across the vent a band of cinerous; tongue covered with the same velvetty down as the male.

The young birds of the first season very much resemble the females; but may generally be distinguished by the white spot, or at least its rudiments, which marks the corner of the mouth. Yet, in some cases, even this is variable, both old and young male birds occasionally wanting the spot.

From an examination of many individuals of this species of both sexes, I have very little doubt that the Morillon of English writers (*Anas glaucion*) is nothing more than the young male of the Golden-eye.

The conformation of the trachea, or windpipe of the male of this species, is singular. Nearly about its middle it swells out to at least five times its common diameter, the concentric hoops or rings, of which this part is formed, falling obliquely into one another when the windpipe is relaxed; but when stretched, this part swells out to its full size, rings being then drawn apart; this expansion extends for about three inches; three more below this it again forms itself into a hard cartilaginous shell, of an irregular figure, and nearly as large as a walnut; from the bottom of this labyrinth, as it has been called, the trachea branches off to the two lobes of the lungs; that branch which goes to the left lobe being three times the diameter of the right. The female has nothing of all this. The intestines measure five feet in length, and are large and thick.

I have examined many individuals of this species, of both sexes and in various stages of colour, and can therefore affirm, with certainty, that the foregoing descriptions are correct. Europeans have differed greatly in their accounts of this bird, from finding males in the same garb as the females; and other full plumaged males destitute of the spot of white on the cheek; but all these individuals bear such evident marks of belonging to one peculiar species, that no judicious naturalist, with all these varieties before him, can long hesitate to pronounce them the same.

ANGLING.

[The following treatise on Angling, compiled from the works of several eminent writers, is respectfully submitted to those who feel interested in this most delightful amusement.]

There is not, perhaps, a greater variety in the faces, than in the favourite pursuits of men. And this variety, which in many cases seems extraordinary, and almost unaccountable, conduces as much to the happiness of the individual, as to the advantages of nations. This reflection naturally arises in the mind of the attentive observer, when he sees the enthusiasm with which many, and even those of lively tempers, pursue angling as an amusement. That a man should have a fondness for the active and inspiring toils of the chace, is what all, except lethargic people, can conceive; but that any, and particularly among the young, should take delight in merely throwing a line, and standing for hours poring upon a piece of water, seems to most men perfectly strange. Yet we all know there are many who follow this apparently dull, tedious and languid amusement, with a perseverance that nothing can overcome, and even with the poignancy of enjoyment which the shooter receives, when he finds birds in abundance, or the hunter, when he follows the hounds in full cry after the fox, who has broke cover.

Angling, however, though it would be a severe punishment to those who have no taste for it, from what they consider its dullness, must be admitted by all to be at least a most healthful exercise. Perhaps none is more capable of retoning a stomach which has been weakened by luxury. Its power to produce hunger is well known to all anglers. This arises partly from the exercise, the sharpness of the air on the banks of streams, and from being in sight of so much of what raises only the idea of quenching thirst. To those whose constitutions have been enervated by a too sedentary life, or by dissipation, we would earnestly recommend it, as it does not, like most other rural amusements, over-fatigue by the violence of exercise required. It affords a gentle exercise which, with the free circulation of pure air on the banks of trout streams, or large rivers, tends to recruit nature, and re-invigorate the system, by a sure, though a slow progress.

There is a considerable degree of skill and experience required to find out the various kinds of flies that frequent certain streams, and to make artificial ones like them, or to prepare those kinds of bait the best calculated to allure the harmless fishes to their destruction. The scientific angler likewise knows well the influence of certain states of the atmosphere, cloudy or clear, in his art; what degree of warmth or cold, is best, or from which point the wind must blow, and how high or low, or what state the stream should be in after much rain, in order to insure success. With respect to the rapid trout streams of the north, the angler never fails to prepare his fishing tackle, when they have been in a state of red flood, to be ready, when they return to what

is called the black state, which is the intermediate one between the former and that of their ordinary limpidness and purity. The red or muddy state, they say, renders the trout sick, and in the black they return to more than their usual appetite. A heavy summer shower is favourable for catching trout. Anglers tell us, that it beats the fly into the water, and prevents the fishes from perceiving the distinction between the real and artificial: and, as to be wetted to the skin is nothing to those who are really fond of the sport, great quantities are often taken during these showers.

Some imagine, there is little or no art in angling, but that the whole consists in drawing out the fish, after it has fixed itself to the fatal hook. That there is something more than this, however, and that both skill and dexterity are necessary to success, is proved from a fact known to all. Experienced anglers will catch numbers, while, in the same part of the stream, and under similar circumstances in other respects, those who are inexperienced, though they may get many a nibble, will not catch one.

The well known methods of catching fish, consist of netting, snaring, bobbing, and angling with rod, hook and line, and variety of baits, living, artificial, or dead; and in the United States is not confined to particular places, but in every river, creek, brook, pond or lake, with which the country is so well provided, and the fish which claim the most attention of those who follow it as a sport, are the salmon, trout, rockfish, pike, chub, perch, catfish, eels, sunfish and roach, beside others which are peculiar to the lakes. The salmon is both a fresh and salt-water fish, and divides its time pretty equally between the two, but is more generally confined to the north, or climates of low temperature. When they have once entered a river, their progress is not easily stopped, frequently ascending those of the greatest length, and remarkable for their rapidity and strong vortexes. They always have their heads to the stream; and their muscular power must be very great, as they shoot up the rapids with the velocity of arrows. They are sensitive and delicate in the extreme, and equally avoid water that is turbid or tainted, and that which is dark with woods, or any other shade. They serve as a sort of weather glasses, as they leap and sport above the surface of the water, before rain or wind; but during violent weather, especially if there be thunder, they keep close to the bottom; and they either hear better than many other species of fish, or they are more sensible to these concussions of the air produced by sound, as any loud noise on the bank throws them into a state of agitation. When their progress is interrupted by a cascade, they make wonderful efforts to surmount it by leaping; and as they continue to do that at places which a salmon has never been known to ascend, their instinct cannot be to go to the particular spot where they were spawned, but simply to some small and shallow stream.

There is scarcely any time, unless when it thunders, or when the water is thick with mud, but you may chance to tempt the salmon to rise to an artificial fly. But the most propitious are critical moments; or, undoubtedly, when, clearing after a flood, the water has turned to a light whey, or rather brown colour; when the wind blows pretty fresh, approaching to a mackerel gale, against the stream or course of the river; when the sun shines through showers, or when the cloudy rack runs fast and thick, and at intervals discovers the pure blue ether from above. In these situations of the water and of the weather, you may always depend upon excellent sport.

The most difficult thing for a beginner, is to throw the line far, neatly, and to make the fly *first* touch the water. A few attentive trials will, however, bring him to do it with dexterity.

It should always be across the river, and on the far side, when you expect the fish to rise. If he appears, do not be too eager to strike, but give him time to catch the fly; then, with a gentle twist, fix the hook in his lip or mouth; if he is hooked in a bone, or feels sore, he will shoot, spring and plunge, with so much strength and vehemence, as to make the reel run with a loud whizzing noise, and your arms to shake and quiver most violently. In this situation, take out the line from the winch quickly, though with composure, keeping it always at the same time stretched, but yet ever ready to yield to his leaping. Do not let it run to any great length, as it is then apt to be unmanageable, but rather follow him, and if he comes nearer, you retire, and wind up as fast as possible, so as to have the line tight, and hold your rod nearly in a perpendicular situation. When he becomes calmer, he often turns sullen, and remains motionless at the bottom of the water. Then cast a few stones upon the spot where you think he is, and this, in all probability, will rouse him from his inactive position. Be cautious in the lifting and the throwing of them, as the salmon may spring at that instant, and break your tackle, should you be off your guard. Being again in motion, he generally takes his way up the current: do not then check him, as by this way his strength will be the sooner exhausted. When, now fatigued, and no longer able to keep his direction, he once more tries all his wiles in disengaging himself from the guileful and hated hook; he crosses and recrosses, sweeps and flounces through every part of the pool or stream; but, finding all his efforts to be vain, he at last, indignant at his fate, with immense velocity, rushes headlong down the stream. If the ground is rough or uneven, or if you cannot keep pace with him, give him line enough,

and when it slackens, wind up again, until you nearly approach him. You will then, probably, observe him floating on his side, his motion feeble, and all his vigour gone. Being unable to make any farther resistance, it behoves you now to lead him gently to the nearest shelving shore; use no gaff, as it mangles the fish very much, but take him softly by the gills into your arms, or throw him, if not too heavy, upon the top of some adjacent bank.

As the Salmon is seldom in the rivers in time for the spring fly, the May fly is often imitated as a lure for him, but is only an imitation, as it has to be made of gigantic dimensions. The only fly of which a *natural* imitation makes a good salmon fly, is the dragon fly. The best baits are large, gaudy artificial flies, lob-worms, line fish baits, and muscles from the shell; the hook must be strong and large; bottom fishing, however, is usually more successful for salmon than fly fishing.

The TROUT has justly been styled "the monarch of the brook," not only, perhaps, from the superiority of its meat over other fish, but from the great diversion in fishing for them, and the superior science required to constitute a successful fisherman.

The plan usually followed for trout fishing, by those who may be called scientific trout-fishers, is with the artificial fly, attached to a long, fine line, wound upon a reel, which is fastened to the handle of the pole, and in consequence, of the great shyness of this fish, stand some distance from the water, to prevent being seen. The trout is a quick and sharp biter, and not very particular as to the kind of fly, rising as well to an artificial as a natural one; but, being very voracious, they fall victims more generally to those who are styled *bottom* fishers: in this case, the bait consists of lobworm, earth-worm, dung-worm and maggot. Fishing with an artificial fly is, certainly, a very pleasant and gentlemanly way of angling, and is attended with much less labour and trouble than bottom fishing. The fly-fisherman has but little to carry, either in bulk or weight, nor has he the dirty work of digging clay, making ground baits, &c. &c. He may travel for miles, with a book of flies in his pocket, and a light rod in his hand, and cast in his bait, as he roves on the banks of a stream, without soiling his fingers; it is, therefore, preferred by many to every other way of angling. Yet fly-fishing is not without it disadvantages, for there are many kinds of fish that will not take a fly; whereas, all the different species which the fresh waters produce, will take a bait at bottom, at some season of the year; and it is also worthy of notice, that the angler who fishes at bottom has many months and days in the year, when the fish will so feed; consequently he has frequent opportunities of enjoying his amusement, when the fly-

fisherman is entirely deprived of the chance of sport, by very cold or wet weather, and the winter season.

Trout delight most in sharp, shallow streams, sometimes lying under a large stone, or shelving clump, at other times swimming, and seemingly striving against the stream; they are also found in such cold water, that no other fish can live therein. They will also live in clear, gravelly and sandy bottomed spring ponds, with a stream running through, but will not thrive so fast, or breed so well, as in rivers; after spawning, they retire into deep, still holes, and under shelving banks, and there remain during the winter season, in the course of which they become very poor, and lose the beautiful spots on their bodies, instead of which they are much infested with a worm or waterlouse, and the heads of trout, at this season, seem much too large, and their whole appearance is lean, lank, and far from that of a beautiful fish: but when the days lengthen, and the sun gets sufficient power to warm and invigorate the elements, then the trout seems to have a new lease of his life, leaving his hiding-place, and getting among the gravel, in rapid parts of the streams, and with much hearty rubbing, speedily gets rid of his troublesome and filthy companions, who have so long infested, or stuck to him, and then soon recovers his former shape and colours.

The next in the catalogue of our favourite fish, ranks the silvery ROCK fish, and which form not only a subject of the most common amusement, but is universally known in all the rivers and smaller tide-water streams throughout the United States. The manner of fishing, and preparation necessary for it is so well known that a description is deemed unnecessary, at this time. The following selection, however, from the American Turf Register and Sporting Magizine, describing the manner in which this fish is trolled for in the Susquehannah, may not be uninteresting.

"The season for trolling begins in the latter part of May, and commonly ends about the middle of July; but some years lasts during August. In the month of June, the rock fish generally bite best. To make good fishing, the river should not be very high nor low, muddy nor clear, but betwixt extremes, in these respects. If the water be clear, the fish dart off at sight of the line; and it is thought, they leave the rapids, when the river is rising, or muddy, to feed upon the flats in the Chesapeake.

"Trolling is very much practised from Port Deposit, to almost any given distance up the river, but not below. The grass that the ducks feed upon, grows too thick on the flats in tide-water for trolling, and the channel is uniformly too deep. The rapids above, where the water is in many parts shoal, and the rocky bottom clear of grass, is the proper place for trolling.

"As I have never seen this method of fishing noticed in any sporting work, I propose giving such an account of it as, I hope, a reader who has never witnessed it will understand. The troller provides himself with a convenient sized, light, well corked skiff; it should be large enough to carry four persons, without sinking deep in the water. He must also take care to get two good oarsmen, accustomed to row among the rapids. The lines generally used are made of flax, (sometimes of cotton,) and twisted very hard, from ninety to one hundred and thirty feet long. On each line there are two brass or steel swivels, one about a foot from the hook, the other some twenty or more, according to the length of the line. The lines must be very strong, but not so thick as to be clumsy, and the steel hooks sharp, with large barbs. The figures of the hooks are made to vary according to the notions of their different owners, who frequently have them made to order, by smiths in the neighbourhood. The long-shanked hook is generally esteemed best. Old trollers are as particular about the shapes of their hooks, as cockers are about their gaffles. One end of the line is made fast to a cork or buoy, as large as a common seine cork. This cork is thrown overboard, when the hook catches against a stone or the limb of a tree; for the boat is under such head-way, and the line being nearly all out, if the fisherman holds on to his line he will break it. He, therefore, in such case, throws the buoy overboard, by which he can find his line, and goes back at his leisure to take it up, and disengage his hook. The bait consists of small fish, such as anchovies, minnows, chubs, &c. &c. If the troller intends starting at daybreak, (the usual hour,) he angles for his bait the afternoon previous, and buries them in the wet sand by the edge of some convenient stream, or keeps them in spring water. If they are exposed to the atmosphere during a warm summer night, they become tender, and tear from the hook.

"Two persons generally fish from the same boat; one of them steers with one hand, and fishes with the other. Each fisherman lets his line out over the side of the boat nearest to him, and close to the stern, (where they sit,) holding it in his hand, a few inches from the water, and leaves the end attached to the cork in the bottom of the boat. He pays out nearly all his line, and keeps constantly pulling it, by short jerks, to feel if it is running over a rock or tree top. The boat is rowed as fast as possible across the river, from shore to shore, above, and as near to the falls as they can go, to avoid being swept down them. The rock fish lie below the falls and ripples, waiting for the small fish that are carried over by the current. Here then the bait falls over, with a constant rotary motion, like a live fish whirled over, side foremost, and struggles in vain against the falls. The swivels turn every time the bait turns, and prevent the line from twisting up into knots; and as there are no sinkers, the rapid head-way of the boat drags them along so fast that the lines have no time to sink. At sight of the bait tumbling over the falls, the rock-fish darts upwards from his cavern in the rocks, and swallows hook and all. The bite of the rock is quick as lightning, and gives a sudden jerk to the arm of the fisherman. When he first discovers he is snared, he rises to the top of the water, and begins to lash it furiously with his forked tail, like 'a spirit conjured from the vasty deep,' then plunges down again to the bottom. He is dragged from thence by the fisherman, who hauls in his long line, hand over hand, until he brings his fish alongside of the boat. If he is of tolerable size, weighing only seven or ten pounds, the troller lifts him into the boat by the line; but if the fish is large, he runs his arm down into the water, and lifts him in by his gills. The excitement that this scene produces in all those in the boat, is not to be described. One instant you see the fish making the water foam with his tail, the next you lose sight of him; one instant the troller feels him jerking desperately backwards, the next he darts ahead towards the boat, carrying the line with him; and the fisherman, who ceases to feel him, is distressed for fear he has broken loose from the hook. The black oarsmen ease up rowing to laugh and shout with great glee. The troller's anxiety to secure his fish is so great, that he alone, of all the company, is silent, and full of uneasiness, until he gets him into the boat. In this manner, it is not unusual to catch, with two lines, ten or twenty fish, varying in weight from five to twenty pounds each, in an hour—sometimes they are caught much larger. When the fish do not bite fast, the troller does not become wearied soon; his line is always out, and he is in constant expectation of feeling a bite, as the boat glides backwards and forwards across the river, in search of luck; he is not confined to one rock, like the sleepy angler.

"This would be very dangerous sport to persons unaccustomed to it; let no presumptuous cits venture upon it by themselves. The flat-bottomed boat must be rowed through the most dangerous falls and whirlpools in the river. Sometimes she is forced, at an impereeptible progress, against a current, running down at an angle of forty-five degrees. If one of the oarsmen happens to fail in strength, or to dip his oar with a false stroke, the current will snatch it upwards out of his hands, and the frail skiff will be dashed to pieces amongst the rocks. Often they are obliged to get out of the boat on some rock above water, and haul her over. A person unaccustomed to it, cannot rely upon his senses of hearing or seeing. He is first deafened by the stunning roar of the incessant flood, then sickened by the tossing of the skiff amongst the waves and eddies. The huge rocks

that rear themselves thick to oppose the rushing waters, covered with eagles and cormorants, and the little islands all *seem to be* swimming backwards. And now she flies across a shoal—at first glimpse the little skiff seems to rest securely on the bottom; at the next, the solid bottom appears deceitfully to recede from beneath her, and leave her to founder in the dark waters of a bottomless swirl. And again, before *he* is aware of it, she seems to have approached so near the falls that nothing can prevent her from going over side foremost. All these false appearances rushing in succession, quick as thought, upon the mind of the troubled cockney, turn his brain with dizziness."

The PERCH is another well known and popular fish, and in point of beauty ranking nearly equal to the former. Their favourite places of resort are about bridges, mill pools, in and near locks, about shipping, floats of timbers in navigable rivers and canals, and at the entrance of docks; also in deep and dark still holes, and in bending and still parts of rivers, at the mouths of sluices and flood gates, and near the sides where reeds and rushes grow. It is not necessary to wait long in a place, for if there are any perch about, and they are inclined to feed, they will soon take the bait; and if you meet with several of them in a still hole, and they are well on the feed, with care, you may often take them all; for, if not disturbed or alarmed by letting one fall from your hook, they will, one after the other, take the bait almost immediately after it settles in the water. Give plenty of time when you have a bite, that the fish may gorge before you strike, for more perch are lost by the angler striking too soon, when he perceives a bite, than by breaking the tackle, after they are fairly hooked. It is, therefore, of the first consequence that the angler, when fishing for perch where he has reason to think he shall meet with some heavy ones, to keep cool and collected when he perceives a bite, giving the perch two or three moments' time to gorge the bait before he strikes, because he then has an opportunity of fixing the hook securely in the perch's paunch, or stomach, from which place it will never draw; but if you strike too soon, that is, while the baited hook is only in the mouth, and if you do fix the hook in the roof of or the side of the mouth, recollect how tender and brittle that part of the perch is, and how frequently, by his plunging and struggling, the hook tears away from such a tender or insecure hold; and when this does not occur, the hole which the hook has made soon becomes enlarged. If then, while you are playing a heavy perch, he unfortunately gets round or among some strong weeds, the line will become slack about the mouth of the fish, and the hook comes or draws away from its hold.

Perch abound most in deep, dark, and sluggish rivers, but in those rivers whose currents run so strong and fast, search for perch, particularly in the bends and still parts thereof. When angling in these bends or coves of a river, or in still places laying under the wind, it is proper to keep, continually, gently moving or drawing your float a little to the right or left, or to lift it out of the water a few inches occasionally, and let it gently drop in again, as this way of acting frequently inclines fish to seize the bait, fearing it is moving away from them, though they have seen the bait stationary, but not being much on feed, would not take the trouble of moving for it, till it seemed likely to make its escape.

When a heavy perch is hooked, play him until he is quite spent, before you attempt to land him, fearing he may be slightly hooked; by thus acting, the reader will see he not only secures a large perch, but very probably may, by such careful and skilful way of angling, fill his basket with them; and they are fish worth all the trouble attending the taking, either for the anglers' own tables, or for making a present of: and also further note, that when perch are well on the feed, and you should be distressed for bait, you may bait your hook with the eyes of those other fish you have taken, or the eye of any other fish, and perch will freely take it. The proper depth to fish for perch is mid-water, or six inches from the bottom. When fishing for large perch you should bait with live minnows, or shrimps, on a floating line; the float should be a cork one, and of tolerable size; the line of India grass, or choice twisted gut from four to six yards long. The hooks from one to three, and size of No. 6.; the bottom hook tie to about nine inches of gut; then loop it to the line above this; about eighteen inches higher up the line place another, which tie to about three inches and a half of gut; then take a leaden pellet, with a hole through it about an inch long, and as thick as a tobacco pipe, and fasten it securely to the line, within about eighteen inches of the bottom hook, and about eighteen inches above this, place another hook, secured as before described, and then your perch line is complete. Some anglers, when perch fishing in very deep water, say from sixteen to thirty feet, use four or five hooks on a line, but three will be found sufficient for the deepest water, and in shallower two; because, though it is known that perch swim at all depths, yet experience will prove that two to one are killed on the bottom hook to what are killed with the highest up on the line; therefore, it is necessary to place the float so as to let the bottom hook nearly touch the bottom. In still waters, when it is calm, if you throw in the water occasionally a few handfulls of loose sand and gravel, it will often move the perch to feed; but when it is a mild breezy day, the perch are then on the rove, and will take a bait in good earnest; if there be neither wind nor rain, your only chance to find perch on the

feed, is to be after them early in the morning, and again towards night-fall, or evening.

When live minnows, or any other small fish, are used for bait, the angler should frequently change the water in the kettle, and take the bait out with a very small net, similar to those used in removing gold and silver fish, only of a smaller mesh; or, if it is made of coarse gauze, it will do, because, putting a hot hand in the kettle distresses and alarms the bait, and frequently is the cause of several of them dying, which sometimes is an irreparable loss for the day, therefore it is necessary to provide against it. When fishing for perch, (or where they are small) with a worm bait, when they bite, let them run about the length of a yard or two, and then strike smartly: place the float on the line so that the bait should swim or hang about a foot from the bottom. The best baits for perch are, live minnows, or shrimps, the red earth-worm, grubs found among dung, and at the roots of cabbages, and young wasps.

CHUB-fishing is rendered unpleasant from the circumstance of their inhabiting inland streams, in the midst of rocks, stumps, and waters overgrown with bushes and trees, and, although beautiful fish, are not very choice food, and are seldom sought for, unless, indeed, in the absence of most other fish; but the well known

SUN fish, the inhabitant of every stream, and pond, is the first fish to which youth apply their dexterity. This beautiful little fish is not only sought after eagerly by the schoolboy, but the more experienced angler oft times, on the margin of some lonely stream, enjoys a satisfaction peculiar to this kind of fishing, where, on the sandy beds beneath his feet, he carefully watches every motion of this little fish, sometimes eager to seize the fatal bait, and then suspicious of the strange food, smells and darts back ever and anon, as though conscious his fatal enemy was lurking near to lure him to destruction.

For Sun fishing, the float line is used altogether, with very small hooks, say No 8 or 9, baited with earth worms, and suffered to hang near the bottom of the water. They inhabit still waters, altogether, and are to found in ditches, on the margin of most brooks, and shallow rivers, with sandy bottoms, mill and other ponds, and the shady coves of creeks.

A beautiful writer describes angling thus:

"As to its practical relations, it carries us into the most wild and beautiful scenery of nature; amongst the mountain lakes, and the clear and lovely streams, that gush from the higher ranges of elevated hills, or make their way through the cavities of calcareous strata. How delightful, in the early spring, after the dull and tedious winter, when the frosts disappear, and the sunshine warms the earth and waters, to wander forth by some clear stream,—to see the leaf bursting from the purple bud,—to scent the odours of the bank, perfumed by the violet, and enamelled, as it were, with the primrose and the daisy;—to wander upon the fresh turf, below the shade of trees;—and, on the surface of the waters, to view the gaudy flies sparkling, like animated gems, in the sunbeams, while the bright, beautiful trout, is watching them from below;—to hear the twittering of the water birds, who, alarmed at your approach, hide themselves beneath the flowers and leaves of the water-lilies;—and, as the season advances, to find all these objects changed for others of the same kind, but better and brighter, till the swallow and the trout contend, as it were, for the gaudy May-fly; and till, in pursuing your amusement in the calm and balmy evening, you are serenaded by the cheerful thrush, performing the offices of maternal love, in thickets ornamented with the rose and woodbine."

"There is, indeed, a calmness and repose about angling which belongs to no other sport,—hardly to any other exercise. To be alone and silent, amid the beauties of nature, when she is just shaking off the last emblems of the winter's destruction, and springing into life, fresh, green, and blooming,—that, that is the charm. The osier bed, as the supple twigs register every fit of the breeze, display the down on the under side of their leaves, and play like a sea of molten silver, for the production of which no slave ever toiled in the mine; and at that little nook where the stream, after working itself into a ripple through the thick matting of *confervæ* and water-lilies, glides silently under the hollow bank, and lies dark, deep, and still as a mirror, is made exquisitely touching by the pendent boughs of the weeping willow that stands 'mournfully ever,' over the stilly stream."

REJOINDER TO I. T. S.

Messrs. Editors,

I read, with much attention, the reply of I. T. S. to the remarks submitted by me in a former number on his mode of Duck Shooting. The arguments used to illustrate his views on the subject, however convincing to himself, I must confess have not had sufficient weight with me to change my way of thinking. A practice of many years at game of every description, from the snipe to the duck (notwithstanding the belief of your correspondent to the contrary, with respect the latter bird) has fully satisfied me, that the correct principle of shooting is not in advance of, but *at* the bird, with a swing of the gun proportionate to its flight, and that the mode adopted by him can never be depended on with certainty, as it is impossible to lay down any rule

as to distance, by which the gun is to be directed in advance of the bird, its flight varying at times from a greater to a less degree of velocity, as well as distance. In his essay on Duck shooting, he admits the necessity, even within the moderate space of sixty yards, of varying the direction of the gun from six inches to three or four feet; and I would ask, if this be the fact, what reliance can be placed on a mode of shooting liable to so much discretionary exercise on the part of the sportsman. In the diagram offered, the data there given, so far from supporting his position, and elucidating the subject, has only made its fallacy the more apparent; for if, as he supposes, it takes one second of time for the passage of the load from the breech to the muzzle, and one second for a forward velocity of the contents in a hundred yards; two seconds must necessarily elapse before the shot would do execution at that distance; and estimating the flight of the duck at eighty-seven feet the second, it follows that it would require a direction of the gun twice eighty-seven feet, or one hundred and seventy-four feet in advance, in order to overcome the rapidity of its flight; or take any proportion of the above time, and, according to his own expression, "the result is the same." This latitude, we should think, would stagger the faith of the oldest Duck shooter, and even I. T. S. must acknowledge his theory to be, however *philosophically* correct, practically unsound and defective.

In this country, where, from the abundance of game, and the forbearance of restraint in its pursuit, the science of shooting, more than in any other, has been brought to its greatest perfection, the principle advanced by me is acted upon by the most skilful and practised shots, and its correctness has been tested upon *all* game; for, let the bird fly fast or slow—with the rapidity of a duck, or the sluggishness of a rail—the sportsman who is governed by it, is satisfied that its truth can be relied on in every instance. If your correspondent would but reflect for a moment on the laws of motion, (and it is only on these, if I understand rightly, the argument rests, laying aside the opposing properties of air and gravitation) I think he would at once abandon his theory of shooting; for it must be evident to the considerate mind that the same laws will apply to the projectile force of a gun, as to any other object. It is a law of motion that, if a stone be thrown perpendicularly into the air, it will fall upon the very spot from whence it was sent; or a rifle firmly fixed, so as to project a ball in the same perpendicular manner into the air, would, on the descent of the ball again, receive it back to its original starting-place. Now it is evident, from the earth's motion, that the projectile body must receive a corresponding impulse, otherwise this rule could not be correct. It is computed that the motion of the earth's surface is at the rate of 950 feet in a second; and if a stone were projected to such an height as to take but one second for its ascent and descent, it must follow that, (unless governed by this impulse) when it reached the ground, it would do so at a distance of 950 feet west of the spot from whence it was thrown. This effect, we are convinced, cannot take place. The experience of every one demonstrates to the contrary; for the motion of the earth is communicated to the stone, in common with all other things upon its surface. Again, if a ball be dropped from the top of the mast of a vessel, under rapid sail, it will not fall into the sea behind the vessel, as might be suspected, but will arrive on the deck, at the foot of the mast. Also, a person on horseback, riding at a fleetness of a mile in two minutes, would, by throwing an object perpendicularly into the air, receive it back into his hand again. Now, as the motion of the earth is to the stone—the vessel to the ball—the fleetness of the horse to the object thrown up by the rider—so exactly is the swing of the gun, to the contents projected from it, at an object in a direct line. To depart from this system of reasoning, all philosophy is confounded, and rendered useless, without any other guide than chance or misapprehension. Upon this principle, aim might be directed on a bird, which, if possible, would describe a complete circle around you, and the gun hold her fire from the commencement until the bird had completed its flight, and on the discharge would strike the object, because, acting upon this principle, which governs nature in her movements, the projected body cannot be diverted from the line of aim, having partaken of the motion, as before mentioned. Persons may argue about allowances before the object; but it certainly does not look like either practice or science in him who upholds the theory; and a man may act strictly scientifically, or according to the laws before mentioned in shooting, (which, in fact, as before stated, is the case with all of the best shots) which practice teaches him is correct, without being able to describe those laws that govern him in this practice; and a person may, also, by much experience, be enabled to shoot with a degree of certainty, on the principle advocated by your correspondent I. T. S.; but rules having their foundation in error, can neither be depended on in the many contingencies of shooting, or recommended to those who wish to embrace this enchanting science as a recreative pleasure.

I will merely say a word or two in relation to the "striking of shot," and I am done. I agree with I. T. S. as to the fact of shot being heard to strike. This position I have never denied—it is only against the efficacy of shot, when thus heard, that I contend. In the discharge of the contents of a gun, the proportion of shot which take effect on an object at a distance of thirty yards, to those that glance off, or are diverted from the

direct line of aim, is as one to 30, and it may by chance occur, "when birds, at even a less distance than one hundred yards, are struck, and sufficiently hard to kill instantly," that the sound of the action of the shot may be heard; but does I. T. S. seriously believe that those shot which produced this sound are the effective shot?

Here again, I would refer I. T. S. to the "production of sound," as a basis of my argument against him. In a case like this, where ocular demonstration is unavailing, we can only come to proof by analogous reasoning on philosophy; and, in the first place, I would remark that sound is created more intensely, frequently, by a weaker, than a greater force: as, for instance, the stroke of a woodman with his axe against a tree, is heard at a greater distance than would the sound produced by a ball propelled by a cannon, striking against the same object; or a rifle ball thrown by the hand against a board fence, would be heard more distinctly, than if propelled by the gun itself; or shot thrown on crusted snow, will create a rattling noise, when, if impelled by the gun, it is too indistinct to be heard: and yet, who does not immediately see the infinite difference between the propelling powers; and why does this lesser power create more sound than the greater? Simply, because, by the action of one body against the other, a vibratory motion is produced in the air by the two sonorous bodies, and thus the sound is wafted to the ear; but in the case of the cannon, rifle, or gun, discharging their contents against the same bodies, their vibration is destroyed by one entering the other. So a bell, by resisting the clapper, produces a very great sound; but supposing the clapper stuck fast to the bell at every stroke, would one-fourth of the sound be produced? No. Then, just so it is with the compact feathers of a duck resisting the shot which produces the sound so much contended for by I. T S. But the *effective* shot, being impelled with so much force as to sink into the flesh (a substance not sonorous) vibration is destroyed, and it produces no other sound, than by condensing the air between the two surfaces, which would be too indistinct to be heard, even at a very trifling distance.

I shall conclude my remarks, by observing that, however I may differ in my views of the subject from your correspondent, to receive and compare his ideas, on matters connected with the science of Shooting, will ever be a source of gratification and pleasure to a

SPORTSMAN.

AN EXCURSION TO THE CHESAPEAKE.

In the fall of the year 1829, C. and myself contemplated visiting the Delaware and Chesapeake Canal, to gratify curiosity in witnessing this important work, and at the same time indulge in our favourite amusement of shooting, which the neighborhood of the Canal, Back Creek, and the Elk River, abundantly affords. We accordingly started, and arrived in good condition at Chesapeake City, about two o'clock of the same day, much gratified with what we had seen, and delighted at the prospect of abundance of game, and the after part of the day was spent in reconnoitering preparative to an early start the next morning. Having received an invitation from our friend Mr. K., (who is the owner of some property at a place nearly opposite where an attempt is making to raise a city, to be called Bohemia City, but known at present by the name of Tick Town) to accompany him on a Partridge-shooting excursion, we embraced his offer, and, after a day's hunt, without any thing material occurring, we returned to our hotel, with but few birds.

Concluding the next day would afford us better success, we determined to set off early, without a guide, and without having any particular place of destination in view. Accordingly, we started, after an early breakfast, but the morning being very cool, and having frozen considerably the night before, rendered the ground over which we walked exceedingly bad, most of it having been newly turned by the plough, and towards the middle of the day became thawed, which caused it to be slippery, and very fatiguing to travel over; this, however, was relieved by occasionally flushing a covey of birds. About 12 o'clock we arrived on the banks of Elk River, the beauty of which amply repaid us for our walk. Hunger and thirst now laid their heavy hands upon us, having started without providing rations for the day, a very unusual circumstance with us, as we are firm believers in the doctrine of supplying the stomach with at least *quant. suff.*, which caused us to direct our steps towards the first place likely to furnish us with refreshments; and after following the river several miles, and noting an innumerable quantity of ducks with which the river abounds, but entirely out of the range of our shot, we brought up to a miserable looking house, just as the old woman and her children were preparing to sit down to a dinner, composed of such materials as would have amply repaid a real disciple of the Epicurean school for a walk of such a distance; it was composed of fine Canvass-back and Bald-pate ducks, with coffee. But how great was our disappointment, when we found the ducks were cooked without a particle of salt, or seasoning of any kind, and on asking if they had salt in the house, the answer was in the negative: when we were thinking about applying a substitute in ashes, as we had somewhere read the Indians do, who make use of this as a substitute on their fish—the little girl recollected an old fish-barrel was in the cellar,

from which a crystal of salt was extracted; and being mashed between two stones, answered a most admirable purpose. We now set about our meal in good earnest; but such a substitute for bread as was arranged before us—being made of Indian meal, but sour, and of the consistency of glaziers' tough putty—no vegetables of any kind—the coffee thick, and no sweetening—were sufficient to appal the keenest appetite, and put a stop to further proceedings. On asking for sugar, the old woman said she thought herself doing very well if she could get coffee; sugar, of course, being a secondary consideration. After making a repast on such materials, hungry men not being particular, we learned from the old woman that her son followed Duck-shooting, and was in the practice of selling his game to Mr. ——, at the tavern where we put up, to which place he had now gone with some geese, as well as ducks. We determined to make our way back to the tavern, in the hope of meeting with and engaging him to take us out duck-shooting. After a fatiguing walk, we arrived just at dark, and had the pleasure of meeting with this sportsman for profit, accompanied by his cousin, who followed the same business. The first thing was to secure the remaining geese and ducks, which were left unsold, to our host, our game bags being in a situation to hold considerable more; and as to return home without some proof of our being *good shots*, after going so great a distance, would only subject us to the jeers of our friends; we, therefore, speedily arranged this part of our sport, and then agreed with them to take us out the next morning, paying a full price for their trouble. The plan of our operations was, that one of them should station himself on Welsh's Point, at daylight, the chance at that time being the most favourable, while the other should come for us in the boat. Accordingly, the next morning, we were up before the day dawned, and after breakfasting, our man arrived. The weather was cool and cloudy, which made it exceeding unpleasant to be rowed a distance of six miles in a small boat, without the ability of hardly stretching yourself in this miserable mode of conveyance. On our arrival at the Point, we found our man; but on inquiry ascertained, to our astonishment, that he had not thus far shot a duck, and had suffered the most important part of the day for shooting to pass by. While we were thus talking, —— says, "There is a duck you can shoot;" he immediately fired, and the duck fell into the water: this seemed a kind of evidence that the fellow was not telling us the truth, and we began to suspect he had been shooting and secreting them. One part of our bargain with these fellows was, to pay them what they asked for their services, to furnish them with ammunition, and the game they shot was to be ours. We now commenced loading our guns, and whilst preparing for action, ——'s attention was arrested by the elegant manner in which this man's dog (a large half-bred Newfoundland) was seen, without any direction from his master, to go into the water, and bring the duck, and could not refrain from going up to him and caressing him, when he immediately attacked him, and bit him in the hand, and lacerated it considerably, the pain from which alone would, on any ordinary occasion, have had the effect to destroy his sport for that time.

An innumerable quantity of ducks were now to be seen swimming in the river and flying in all directions: in fact, to those who have never been there, and witnessed the numbers which are oftentimes to be seen, it would be incredible. Our men proposed that we should remain on the Point, whilst they would go out in the boat, and endeavour to alarm the ducks, so that they should fly across the Point where we were secreted; and, as the dog would not stay with us, they would take him along also, and return in time to pick up any ducks we should shoot that might fall in the water. They had not departed but a short time before it commenced raining, intermixed with snow; but this did not lessen our zeal, as we soon had several fine canvass-backs down in the water; but they floated from us, and, as our men did not come in as they promised, we lost sight of them entirely, and so in a short time were lost many other ducks also. Towards the close of the day, a boat was seen approaching us, which turned out to be our men, and to compensate us, we expected they had been very successful, which alone could have induced them to play us such an unfair game, and leave us so situated as to be prevented from getting those which we shot, or from leaving the place we were on, without considerable difficulty. But judge of our surprise, when these *caitiffs* very gravely informed us they had not shot a single duck! Our suspicions were now confirmed, that they were not content with getting what they asked for their services, but the ready sale, and high price of these ducks, had operated upon them to conceal the game until we had departed. Impressed that no advantage would result from quarrelling with them, we concluded to make the best of it, and proposed to embark immediately, as we were wet, and almost perishing with cold; and after enjoying the *pleasures* resulting from being rowed back a distance of five or six miles, in our wet clothes, the rain and sleet pelting us all the way, we arrived at the tavern pretty well changed in our feelings with regard to the anticipated *pleasures* of Chesapeake Duck-shooting, and determined to start for home in the morning, after *buying* all the game the tavern-keeper had, together with that which we purchased before, and the little we had got *secundum artem*, being put into a large box, and taking special care that it should be stripped in such manner that the game should be fully exposed, we

left this place, where we were well satisfied we had been charged at a good price for other matters besides ducks. But all these vexatious circumstances, Mr. Editors, were counterbalanced by the gratification we experienced wherever our box was seen, by some such remarks as these: "Why, gentlemen, you have had grand luck!"—"Are these your birds? Wild geese too!"—and some *ganders* would ask us if these were not

SWAN.

VERNAL NATURE.

"The time of the singing of birds is come."

THERE's a voice from the woods!—The winter had set
His seal of ice where the flow'rets met,
And long had he held his chilly reign,
With storm and sleet, o'er the frozen plain,
And his purest garlands of snow were hung
On the ancient oak and the sapling young,
And the sigh of the bleak and northern breeze,
Was all that was heard from the leafless trees.

The streams that had murmur'd thro' summer's sway,
Then silently crept on their gloomy way,
For their voices were chok'd by the tyrannous force
Which Winter had set on their rippling course;
The shrill cicada that woke the night,
Had shrunk away from the season's blight,
For the hoary monarch had utter'd his will,
And the sounds from the forest were hush'd and still.

But now there's a voice from the woods again!—
It is not the language nor voice of men;
It comes with a murmur soft and low,
A sound that Nature is glad to know,
Because it tells that the winter is past,
That there's nought to fear from his raving blast,
That the sceptre has dropp'd from his palsied hand,
And Spring has come back to refresh the land.

There's a voice from the woods!—'Tis the rushing of streams,
That melt in the sun's reviving beams;
From their mountain holds in their joy they foam,
And leap, like the kids that around them roam;
Away, from rock to rock, they go,
Tossing their waters to and fro,
As if they were things of life, to be
Awake to the feelings of liberty.

There's a voice from the woods!—'Tis the voice of flowers,
That breathe perfume from their forest bowers,
As, peeping forth from their close retreat,
They open their leaves the spring to greet,
And when the earth is array'd in green,
With their light blue petals are modestly seen;
Or drest in their beautiful robes of red,
Along its surface their odours shed.

There's a voice from the woods!—'Tis the warbler's song,
That comes in melody, sweet and strong,
From the depth of the grove, on the balmy air,
The first assurance that Spring is there;
The wild deer arches his neck to hear,
And drinks in the sound with a joyous ear,
For it tells him that Nature again is awake,
And he hurries to seek her, by mountain and lake.

O there's joy in the wood where the blue-bird has sung,
For it tells, tho' the shoots and the flowers are young,
That the forest again will be cover'd with leaves—
That the field will again have its burthen of sheaves—
That the bounties and blessings that come in its train,
Will return with the season of dew-drops and rain;
O well may the poet thy eulogy sing,
And hail thy wild melody, herald of Spring!

C. W. T.

MYSTERIOUS SOUNDS.

The wide spread sail of a ship, rendered concave by a gentle breeze, is a good collector of sound. "It happened," says Dr. Arnott, "once, on board a ship sailing along the coast of Brazil, far out of sight of land, that the persons walking on deck, when passing a particular spot, always heard very distinctly the sound of bells, varying as in human rejoicings. All on board came to listen, and were convinced; but the phenomenon was most mysterious. Months afterwards, it was ascertained that, at the time of observation, the bells of the city of St. Salvador, on the Brazilian coast, had been ringing on the occasion of a festival; their sound, therefore, favoured by a gentle wind, had travelled, perhaps, one hundred miles by smooth water, and had been brought to a focus by the sail on the particular situation, or deep, where it was listened to. It appears, from this, that a machine might be constructed, having the same relation to sound that a telescope has to sight."

Edin. Phil. Jour.

GRIZZLY BEARS

GRISLY BEAR.

URSUS HORRIBILIS.

[Plate XI.]

Grisly Bear. Mackenzie, *voyages &c.* 160.—*Grisly, brown, white and variegated Bear.* Lewis & Clark. —*Grizzly Bear.* Warden's *United States.* Godman *Nat. Hist.* i. p. 131.—*Ursus Horribilis. Ord.* Say. *Expedit. to the Rocky Mountains,* ii. p. 52.—*Ursus Cinereus.* Desm. *Mammal.*—*Ursus Ferox.* Lewis & Clark. Richardson. *Faun. Am. bor.* 24.—*Ursus Candescens.* Hamilton Smith. Griffith's and King. ii. p. 229. & 5. No. 320.—Peale's Museum.

The Grisly Bear belongs to a division of the carnivora, which, although far less sanguinary than the other groups of his formidable order, and endowed with a faculty of wholly subsisting on vegetable food, nevertheless contains some of the largest and most powerful of the destructive mammalia. This division, which comprehends several very closely allied genera, is termed Plantigrade, the individuals comprising it treading on the whole sole of the foot, thus enabling them to raise and maintain themselves on their hinder legs with great facility. They have five toes on each foot, and are generally sluggish in their gait.

The genus Ursus, or the Bears, is characterised by their complete plantigrade walk, from their claws, which are five in number, incurved, large, and powerful, from the shortness of their tail, and from the peculiarities of their dental system. They are extremely powerful, but clumsy, sluggish, and uncouth, generally feed on vegetable substances being in fact but semi-carnivorous. They will, however, sometimes destroy the smaller animals, and, in case of necessity, will subsist on fish. They are also very fond of honey, and notwithstanding the clumsiness of their conformation, exhibit no slight degree of agility in mounting trees in search of it. They never attack man except in self-defence, or under the influence of severe hunger; and it is reported, that in the latter state they will associate together in search of animal food. Both sexes retire in the winter, and the period of parturition with the female is in the spring, after a gestation of seven months, when she produces from one to five at a birth.

Great confusion has existed in the determination and classification of the different species; all the discussions that have been entered into, in the hopes of elucidating this question, have ended in an acknowledgment of the difficulty of the undertaking. This is particularly the case with the Bears with brown fur, approaching more or less to black on the one side, and on the other to the lighter tints. Thus Cuvier, in his last edition, says, that he is by no means convinced that any specific difference exists between the subject of our present illustration, and the Brown Bear of Europe.

The only mode in which questions of this nature can be satisfactorily settled, is accurately to describe and represent such specimens as occur in different countries, so that in time an approximation and comparison of them, in all the details of their organization, can be properly made.

The Grisly Bear is indubitably the most formidable and powerful of all the quadrupeds which inhabit the northern regions of the American continent; and it is not to be wondered at, that a victory over an animal of such strength and ferocity, should be considered of such importance among the native tribes inhabiting the inhospitable regions where it is now found.

Mr. Say, who was the first naturalist that describes this species, gives the following account of it: "*Hair* long, short on the front, very short between and anterior to the eyes, blacker and coarser on the legs and feet, longer on the shoulders, throat, behind the thighs, and beneath the belly, paler on the snout; *ears* short, rounded; *front* arcuated, the line of the profile continued upon the snout, without any indentation between the eyes; *eyes* very small, destitute of any remarkable supplemental lid; *iris* of a burnt sienna or light reddish brown colour, muffle of the nostrils black, the sinus very distinct and profound; *lips*, particularly the superior, anteriorly extensive, with a few rigid hairs or bristles, tail very short, concealed by the hair. The hair gradually diminishes in length upon the leg, but the upper part of the foot is more amply furnished. *Teeth*, incisors six, the lateral one with a tubercle on the exterior side, canines large, robust, prominent, a single false molar behind the canine, remaining molars four, of which the anterior one is very small, that of the upper particularly, that of the lower jaw resembling the second false molar of the dog.

"*Anterior feet*, claws elongated, slender fingers with five sub-oval naked tubercles, separated from the palm, from each other, and from the base of the claws by dense hair, palm on its anterior half naked, transversely oval, base of the palm with a rounded naked tubercle, surrounded by hair. *Posterior feet* with the sole naked, the nails moderate, more arcuated and shorter than those of the anterior. The nails do not diminish in the least in width at tip, but they become smaller towards that part, by diminishing from beneath. The Grisly Bears vary exceedingly in colour, and pass through the intermediate gradations, from a dark brown to a pale fulvous or greyish."*

* Expedition to the Rocky Mountains, Vol. II. p. 52.

The accounts of the dimensions of these animals differ; they are reported to attain a weight exceeding 800 pounds, and Lewis and Clark mention one that measured nine feet in length, and add, that they had seen a still larger one, but do not give its dimensions. Governor Clinton received intelligence of one said to be fourteen feet long, but even admitting that there was no exaggeration in this statement, it is probable that the admeasurements were taken from a skin which had been stretched. The dimensions given by Mr. Say, which were taken from the two prepared specimens in the Philadelphia Museum, by no means give an idea of the size to which this animal attains, as these individuals died before they had reached their full growth; these measurements are however valuable as presenting a correct view of the proportions of different parts of the body.

From the account of Mr. Say, it appears that the Grisly Bear differs from the other species of the genus, by the elongation of its anterior claws, and the rectilinear or slightly arcuated form of its facial profile. Its nearest approach is to the Norwegian variety of the Alpine Bear, (*U. Arctos,*) from which however it differs in the particulars just stated, and by its shorter and more conical ears. The soles of its feet are longer and its heel broader than those of the Brown Bear of Europe. The shortness of its tail is also another remarkable characteristic. Dr. Richardson says it is a standing joke among the Indian-hunters, when they have killed a Grisly Bear, to desire any one unacquainted with the animal, to take hold of its tail.

The size of the feet and claws of this Bear, is a very striking peculiarity of the species; of this some idea may be formed from the measurements given by Lewis and Clark. These gentlemen inform us, that the breadth of the fore foot, in one of the individuals observed by them, exceeded nine inches, whilst the length of the hind foot, exclusive of the claws, was eleven inches and three quarters, and its breadth seven inches. The claws of the fore feet of another specimen measured more than six inches. The latter, as we have said, are considerably longer, and less curved than those of the hind feet, and do not narrow in a lateral direction as they approach their extremity, but diminish only from beneath, the point is consequently formed by the shelving of the inferior surface alone, their breadth remaining the same throughout the whole of their enormous length, and their power being proportionally increased; an admirable provision for enabling the animal to exercise to the fullest extent his propensity for digging up the ground, either in search of food, or for other purposes. It appears, however, on the other hand, to unfit him for climbing trees, which he never attempts.—These claws are worn by the Indians as necklaces, and the fortunate individual who procures them by the destruction of the animal is highly honoured.

Of the strength of this Bear, some estimation may be formed, from its having been known to drag the carcass of a Buffalo, weighing at least a thousand pounds, to a considerable distance. Dr. Richardson gives the following story which he says is well authenticated. "A party of voyagers, who had been employed all day in tracking a canoe up the Saskatchewan, had seated themselves in the the twilight by a fire, and were busy in preparing their supper, when a large Grisly Bear sprung over their canoe that was tilted behind them, and seizing one of the party by the shoulder carried him off. The rest all fled in terror with the exception of a Metif, named Bourasso, who grasping his gun followed the Bear as it was retreating leisurely with its prey. He called to his unfortunate comrade that he was afraid of hitting him, if he fired at the Bear, but the latter entreated him to fire immediately, without hesitation, as the Bear, was squeezing him to death, on this he took a deliberate aim, and discharged his piece into the body of the Bear, which instantly dropped its prey to pursue Bourasso. He escaped with difficulty, and the Bear ultimately retreated to a thicket, where it was supposed to have died, but the curiosity of the party not being a match for their fears, the fact of its decease was not ascertained. The man who was rescued had his arm fractured, and was otherwise severely bitten by the Bear, but finally recovered."*

The blow they can inflict with their fore paws is very severe, and from the size of the claws is often productive of serious consequences. The writer we have just quoted also mentions, that he was informed that there was a man living in the neighborhood of one of the British trading posts, who was attacked by a Grisly Bear, which sprung out of a thicket, and with one stroke of its paw, completely scalped him, laying bare the scull, and bringing the skin of the forehead down over the eyes. Assistance coming up, the Bear made off without doing him further injury, but the scalp not being replaced, the poor man lost his sight; although he thinks that his eyes are uninjured. Another instance of the same kind is given in Long's Expedition, of a hunter having received a blow from the fore paw of one of these animals, which destroyed his eye and crushed his cheek bone.

The Grisly Bear is carnivorous, and, where excited by hunger, will indiscriminately slaughter every creature that cannot elude his pursuit, but he also will occasionally feed on vegetables, and is observed to be particularly fond of the roots of some species of *Psoralea* and *Hedysarum*. They also eat the fruits of various shrubs, as the bird cherry, the choke cherry, and the *Hippophae canadensis*, which latter produces a powerful cathartic effect on them.

The young and gravid females hibernate, but the old

*Richardson. Faun. Am. Bor. 27.

males are found abroad at all seasons in quest of food. Mackenzie speaks of a den of these animals which was ten feet wide, five feet high, and six feet long. As this Bear roams over the snow, its foot marks are frequently seen in the spring, and when there is a crust upon the snow, the weight of the animal often causes it to crack and sink for a considerable distance round the spot trod upon. These impressions, somewhat obscured by a partial thaw, have been considered as the vestiges of an enormously large and unknown quadruped, and perhaps have given rise to the reports of there being live Mammoths on the Rocky mountains.

The Grisly Bear is now found in the range of the Rocky Mountains, and the plains lying to the eastward of them, as far as latitude 61°, and perhaps even farther north. According to Pike, it occurs as far south as Mexico. Lewis and Clark could not ascertain whether it inhabited the country between the western declivity of the Rocky Mountains and the sea coast. Dr. Richardson, on the authority of Mr. Drummond, says, they are most numerous in the woody district skirting the eastern base of the Rocky Mountains, especially where there are open prairies and grassy hills. From the traditions existing among the Delaware Indians respecting the big naked Bear, the last of which they believe dwelt to the east of the Hudson river, there is some ground for a belief that this animal once inhabited the Atlantic States.

The Grisly Bear appears to be very tenacious of life. Mr. Say informs us, one lived two hours, after having been shot through the lungs, and whilst in this state, prepared a bed for himself in the earth, two feet deep, and five feet long, having previously run a mile and a half. It is, in fact, very difficult to kill one of these animals by a single shot, except the ball penetrates the brain or the heart, and this seldom is effected from the form of the skull in the first case, and the thick coat of hair in the latter. To give a better idea of the danger attendant on the chase of these bears, we select the following instance from Lewis and Clark:

One evening the men in the hindmost of one of Lewis and Clark's canoes perceived one of those Bears lying in the open ground about three hundred paces from the river, and six of them, who were all good hunters, went to attack him. Concealing themselves by a small eminence, they were able to approach within forty paces unperceived; four of the hunters now fired, and each lodged a ball in his body, two of which passed directly through the lungs. The Bear sprang up and ran furiously with open mouth upon them; two of the hunters, who had reserved their fire, gave him two additional wounds, and one breaking his shoulder-blade, somewhat retarded his motions. Before they could again load their guns, he came so close on them, that they were obliged to run towards the river, and before they had gained it, the Bear had almost overtaken them. Two men jumped into the canoe; the other four separated, and concealing themselves among the willows, fired as fast as they could load their pieces. Several times the Bear was struck, but each shot seemed only to direct his fury towards the hunter; at last he pursued them so closely that they threw aside their guns and pouches, and jumped down a perpendicular bank, twenty feet high, into the river. The Bear sprang after them, and was very near the hindmost man, when one of the hunters on shore, shot him through the head, and finally killed him. On examination, it was found that eight balls had passed through his body in different directions.

Another instance is recorded by these travellers of the same character. An individual received five balls through his lungs, and five other wounds; notwithstanding which he swam more than half across a river to a sand bar, and survived upwards of twenty minutes.

From these and analogous facts, it is not to be wondered at that even white hunters should be willing to avoid an encounter with so formidable an adversary, and that the Indians, mostly unprovided with fire-arms, should never attack him, except in parties of six or eight, for having no weapons but bows and arrows, or the bad guns with which the traders supply them, they are obliged to approach very near the Bear, and as no wounds, except as we have stated, through the head or heart, are fatal, they frequently fall a sacrifice if they miss their aim.

"It appears, however, that the Bear will not attack man unless enraged or pressed by hunger. Mr. Drummond, the botanist, in his excursions over the Rocky mountains, had frequent opportunities of observing the manners of the Grisly Bears; and it often happened, that in turning the point of a rock or sharp angle of a valley, he came suddenly on one or more of them. On such occasions they reared on their hind legs, and made a loud noise like a person breathing quick, but much harsher. He kept his ground, without attempting to molest them, and they on their part, after attentively regarding him for some time, gradually wheeled round and galloped off, though there is little doubt but that he would have been torn to pieces had he lost his presence of mind and attempted to fly. When he discovered them from a distance, he usually frightened them by beating on a large tin box, in which he carried his specimens of plants. He never saw more than four together, and two of these he supposes to have been cubs. He was only once attacked and then by a female, for the purpose of allowing her cubs time to escape. His gun on this occasion missed fire, but he kept her at bay with the stock of it, until some gen-

tleman of the Hudson's Bay Company, with whom he was travelling, came up, and drove her off. In the latter end of June, 1826, he observed a male caressing a female, and soon afterwards, they both came towards him, but whether accidentally, or for the purpose of attacking him, he was uncertain. He ascended a tree, and as the female drew near, fired at and mortally wounded her. She uttered a few loud screams, which threw the male into a violent rage, and he reared up against the trunk of the tree in which Mr. Drummond was seated, but never attempted to ascend it."* This mode of escaping by ascending trees is frequently practised by hunters when pursued. Two instances are related by Lewis and Clark, and many others are to be found in the various authors who treat of this animal, where a hunter has been held a close prisoner for many hours, by the infuriated animal keeping watch at the foot of the tree.

Notwithstanding the ferocity of the Grisly Bear, it would seem, that he is capable of a certain degree of domestication, especially when young. Governor Clinton says "that Dixon, an Indian trader, told a friend of his, that this animal had been seen fourteen feet long; that notwithstanding its ferocity it had been occasionally domesticated, and that an Indian, belonging to a tribe on the head waters of the Mississippi, had one in a reclaimed state, which he sportively directed to go into a canoe belonging to another tribe of Indians, then returning from a visit; the Bear obeyed, and was struck by an Indian; being considered as one of the family, this was deemed an insult, resented accordingly, and produced a war between these nations.†

It is also stated in Long's Expedition that a half-grown individual was kept chained in the yard of the Missouri Fur Company, near Engineer Cantonment, and chiefly fed on vegetable substances; as it was observed, that he became furious when too plentifully supplied with an animal diet. He was in continual motion during the greater part of the day, pacing backwards and forwards to the extent of his chain. His attendants ventured to play with him, though in a reserved manner, fearful of trusting him too far, or of placing themselves absolutely within his grasp; he several times broke loose from his chain, on which occasions he would manifest the utmost joy, running about the yard in every direction, rearing upon his hind feet, and capering about. "I was present on one of these occasions," observes Mr. Say, "the squaws and children belonging to the establishment, ran precipitately to their huts and closed the doors; he appeared much delighted with his temporary freedom, and ran to the dogs which were straying about the yard, but they avoided him. In his round he came to me, and rearing up, placed his paws upon my breast; wishing to rid myself of so rough a playfellow, I turned him around, upon which he ran down the bank of the river, plunged into the water, and swam about for some time."*

Most of our Philadelphia readers must remember the two young bears of this species which formerly were kept in the Menagerie of Peale's Museum. These individuals were procured by Pike, when on his expedition, about 1600 miles from the nearest American post, and kept with the intention of presenting them to Mr. Jefferson, then president of the United States. When Pike first obtained them, they were carried for three or four days in the laps of his men on horseback, and afterwards in cage on a mule, but were always let out, wherever the party halted. By this treatment, they became extremely docile when at liberty, following the men like dogs. When well supplied with food they would play like young puppies with each other and the soldiers; but the instant they were shut up in their cage they became cross and surly, and would worry each other until they were so exhausted that they were incapable of further exertion.

When Mr. Peale received them, they were about a year old, and tolerably docile, but soon gave indications of the natural ferocity of their species. "As they increased in size they became exceedingly dangerous, seizing and tearing to pieces every animal they could lay hold of, and expressing extreme eagerness to get at those accidentally brought within sight of their cage, by grasping the iron bars with their paws and shaking them violently, to the great terror of spectators, who felt insecure while witnessing such displays of their strength. In one instance an unfortunate monkey was walking over the top of their cage, when the end of the chain which hung from his waist dropped through within reach of the Bears; they immediately seized it, dragged the screaming animal through the narrow aperture, tore him limb from limb, and devoured his mangled carcass almost instantaneously. At another time a small monkey thrust his arm through an opening in the cage to reach some object; one of them immediately seized him, and with a sudden jerk, tore the whole arm and shoulder-blade from the body, and devoured it before any one could interfere. They were still cubs, and very little more than half grown, when their ferocity became so alarming as to excite continual apprehension lest they should escape, and they were killed in order to prevent such an event."† Their skins were ably prepared, and now form part of the interesting collection in the Philadelphia Museum.

There is also a full grown specimen in the Tower of London, which was presented to George the III. about seventeen years since, by the Hudson's Bay Company. This

* Richardson, O. C.
† Trans. of the Lit. and Philos. Soc. of New York.

* Long's Expedition to the Rocky Mountains, vol. 2 p. 55.
† Godman's Nat. Hist. Vol. I. p. 183.

size is far superior to any Bear that has ever been seen in Europe, and his ferocity in spite of the length of time during which he has been a prisoner, and the attempts that have been made to conciliate him, still continues undiminished. He does not offer the slightest encouragement to familiarity on the part of his keepers, but treats them with as much distance as the most perfect strangers; and although he will sometimes appear playful and good tempered, yet they know him too well to trust themselves within his grasp."

The Grisly Bear has long been known to the Indian traders as differing from the Black Bear in the inferiority of its fur, its greater strength and carnivorous habits. Every traveller through the region it frequents has also mentioned it, thus the early French writers call it *Ours-blanc*. But Lewis and Clark were the first who described in so accurate a manner as to enable naturalists to ascertain that it was a distinct species; this was pointed out by Dewitt Clinton from the description of these gentlemen in 1815. Mr. Ord, also, from the same materials, described it under the name of *horribilis* in the introduction to Morse's geography in ——, this name having been adopted by Mr. Say, who was, as we have stated, the first naturalist that accurately described it from the actual inspection, we have followed him in assuming Mr. Ord's designation of it. Since this it has received the various specific names given in the list of synonomy at the commencement of this article. The English name of Grisly has also been adopted as having been bestowed on it by Mackenzie as early as 1801, and as less liable to objection than that of grizzly which is founded on a colour that is common to other species. Those of our readers who wish for further information respecting this animal, will find ample details in Lewis and Clark's Travels, Long's Expedition, Godman's Natural History, and Richardson's Fauna Americana Boreali, of which, as well as of a short sketch in that admirable work, the Tower Menagerie, we have freely availed ourselves in the foregoing account.

THE GRIFFON VULTURE.

Vultur Fulvus. Briss.

There are few prejudices more deeply rooted in our nature, than that which delights in investing the animal creation with the feelings and the passions of mankind. We speak of the generosity of the Lion and the meekness of the Lamb, the magnanimity of the Eagle and the simplicity of the Dove, as if the peculiar instincts manifested by each of these animals were the result of an impulse similar to that which actuates the human mind. But the truth is, that the qualities thus designated, in so far as they actually exist, are nothing more than the natural and necessary consequences of the animals' organization, specially fitted in each particular case for the performance of a special office, and concurring in the mass to the maintenance of that due equilibrium in the system of the universe on which its continued existence mainly depends.

The Vultures and the Eagles furnish a striking instance of the extent to which this prejudice has been carried. The latter, eminently qualified by their organization for seizing and carrying off a living prey, serve a useful purpose of nature by setting bounds to the multiplication of the smaller species both of quadrupeds and birds, which might otherwise become too numerous for the earth to support: while the former, disqualified by certain modifications in their structure for the performance of a similar task, are no less usefully employed in removing the putrefying carrion which but for them would infect the atmosphere with its unwholesome exhalations. Thus both are of equal importance in the economy of nature; and both are stimulated to the performance of the particular service for which they were created, by the impulse of that instinct which is the immediate result of their organic structure. Instead, however, of regarding them as alike the ministers of nature in the maintenance of her laws, man has chosen to fix upon the one a character for bravery and generosity, and to brand the other with the epithets of base, cowardly, and obscene. The Vultures, which are perhaps the most useful and certainly the most inoffensive, have thus been consigned to perpetual infamy; while the Eagles, in the true cant of that military romance which has ever borne so great a sway over the passions of mankind, have been exalted, in common with the warrior that desolates the world, into objects of admiration, and selected as the types and emblems of martial glory.

From these fanciful associations we turn to the realities of nature, and proceed to indicate the characters by which the family of Vultures are distinguished from all other Birds of Prey. They consist in the entire or partial denudation of the head and neck, the latter of which is much elongated; the lateral position of the nostrils in a generally broad and powerful bill, curved only at its point, and clothed at its base by an extended cere; the nakedness of the tarsi, which are covered only with small reticulated scales; and the strong thick talons, somewhat blunted at the points, but little curved, and scarcely, if at all, retractile. Of these characters the most obvious is the absence of feathers to a greater or less extent on the head and neck, a mark of distinction

* Tower Menagerie, 128.

which, like all the rest, is closely connected with the habits of the birds. Thus it has been pointed out that in other groups a falling off or thinning of the feathers is the frequent result of feeding upon flesh especially when in a state of decay. The bareness of these parts in the Vultures enables them morever to burrow in the putrid carcasses on which they prey without risk of soiling their plumage.

Their largely extended nostrils and the great internal developement of these organs would seem to be of manifest use in guiding the Vultures to their prey, which they are generally believed to scent from an immense distance. It has, however, been lately maintained by a most acute observer of the habits of birds, Mr. Audubon, that this belief, which has been entertained from the earliest antiquity, is founded in error, and that the Vultures are directed to their prey by sight alone, the lofty pitch at which they fly and the surpassing excellence of their vision enabling them to detect it at an almost inconceivable distance. Several of the experiments brought forward by that gentleman in support of his hypothesis, appear at first sight almost decisive of the question; but we cannot consent to abandon the received opinion, corroborated as it is to the fullest extent by the anatomical structure of the organs of smell, until repeated experiments shall have placed the fact beyond the possibility of doubt.

It is almost unnecessary to point out the great utility of the strong deep curved bill of most of the Vultures in tearing to pieces the carcasses on which they feed, and consigning them in large masses to their maws. The nakedness of their legs may be regarded as dependent on the same causes and serving the same purposes as that of their heads and necks. But the character which has the strongest influence on their economy must be sought for in the structure of their claws. While the Falcons are enabled by means of their strongly curved, sharp-pointed, and highly retractile talons, to seize their victims with an irresistible grasp and to convey them through the air, the Vultures are restricted by the obtuseness of those organs, their want of the necessary curvature, and the almost total absence of retractility, to the use of their beaks alone in the seizure of their prey, which they are quite incapable of transporting with them in their flight, and are consequently compelled to devour upon the spot. It is to this simple modification in structure that they are chiefly indebted for that propensity for preying upon carrion, which has obtained for them all the opprobrious epithets that stigmatize them throughout the world.

The Vulture family, which formed but a single genus in the Linnæan classification, has since been divided into several groups, some of which appear to us to be still capable, and deserving also, of further subdivision. We have already spoken of the South American group, of which the Condor furnishes the most conspicuous example; and we have now to turn our attention to another section, almost equally typical in the family, the representatives of which are scattered over the three divisions of the Old Continent. It is in this section more particularly that we conceive a further separation of species both practicable and desirable. M. Savigny has already effected it to a certain extent by the establishment of two well marked genera for the reception of the two European species; and Mr. Vigors has pointed out the propriety of separating the Angola Vulture of Pennant from the rest of the group. To these three strongly marked forms we would add the bird which furnishes the subject of the next following article as the type of a fourth, with which we doubt not that the Pondicherry Vulture of Latham would form a natural association. Of the remaining species we will not venture to speak, not having yet enjoyed the opportunity of examining them in nature.

The essential characters of the entire section consist, in addition to all the characteristic marks of the family, in the almost total want of feathers on the head and neck; in the position of the eyes on a level with the general surface of the head; in the prominence of the crop, which is covered by a naked and highly extensible portion of skin; in the transverse position of the nostrils at the base of a strong beak not surmounted by a fleshy caruncle; in the exposure of their auditory openings, which have no elevated margin; in the great strength of their legs; the comparative weakness of their blunt and unretractile claws; and the shortness of their first quill-feather, which is of equal length with the sixth, the third and fourth being the longest of the series. To these may be added the usually great elongation of their necks; the fleshy consistence of their tongues; the prolongation of the middle toe, which is united to the outer by a membranous expansion at the base, but quite distinct from the inner, the latter being the shortest of the three and about equal in length to the posterior or thumb; and the length of the wings, which extend when closed beyond the extremity of the tail. The wings are, however, rarely brought close to the body, even when the bird is completely at rest; and this circumstance, together with the somewhat crouching posture in which the Vultures are compelled, by their deficiency in the power of grasping, to sustain themselves, has been frequently adverted to as affording a striking contrast with the bold, upright, and collected bearing of the Eagles.

In subdividing the European Vultures, M. Savigny has characterized that which forms the subject of the present article by its naked transversely elongated and lunulate nostrils; its tongue fringed with sharp points; and its tail composed of fourteen feathers. Its head and neck are covered with a short, thick, white down, which is wanting only at the lower part in front corresponding with the situation of

Griffon. Vulture.

Chinchilla.

the crop, where the naked skin has a bluish tinge. A broad ruff of pure white feathers surrounds the lower part of the neck; and the rest of the plumage, in the adult bird, is of a grayish brown, with the exception of the quill-feathers of the wings and tail, which are of a dusky black. The under parts are somewhat lighter than the upper; the bill is of a livid colour with a tinge of blue; the iris of a bright orange; and the legs and feet grayish brown, the feathers of the inside of their upper part being pure white. In the female the colours appear to coincide exactly with those of the male; but the young birds are at first of a bright fawn, which is variegated, after the first and second changes of plumage, with patches of gray, and changes to the perfectly adult hue only after the close of the third year.

This noble species of Vulture, which is one of the largest birds of prey of the Old Continent, measuring from three feet and a half to four feet in length, and more than twice as much in the expanse of its wings, is found on the lofty mountain chains of Europe, Asia, and Africa. It is not uncommon during the summer in the Alps and Pyrenees, but is said to retreat in winter to the north of Africa, extending itself, according to Le Vaillant, to the Cape of Good Hope. M. Risso, however, informs us that it is stationary on the Alps in the vicinity of Nice. The Rock of Gibraltar, the Mountains of Silesia and the Tyrol, Greece and Turkey, are also spoken of as its European habitats; Egypt is indicated by Savigny; the Mountains of Ghilan in the north of Persia by Hablizl; and other localities still farther east are given by other writers.

The nest of the Griffon Vulture is formed in the clefts of rocks. It lays from two to four eggs, which are of a grayish white, with numerous spots of a very light and diluted red. Like all the other birds of its tribe it feeds principally upon dead carcasses, to which it is frequently attracted in very considerable numbers. When it has once made a lodgment upon its prey, it rarely quits the banquet while a morsel of flesh remains, so that it is not uncommon to see it perched upon a putrefying corpse for several successive days. It never attempts to carry off a portion, even to satisfy its young, but feeds them by disgorging the half-digested morsel from its maw. Sometimes, but very rarely, it makes its prey of living victims; and even then of such only as are incapable of offering the smallest resistance; for in a contest for superiority it has not that advantage which is possessed by the Falcon tribes, of lacerating its enemy with its talons, and must therefore rely upon the force of its beak alone. It is only, however, when no other mode of satiating its appetite presents itself, that it has recourse to the destruction of other animals for its subsistence.

After feeding it is seen fixed for hours in one unvaried posture, patiently waiting until the work of digestion is completed and the stimulus of hunger is renewed, to enable and to urge it to mount again into the upper regions of the air and fly abroad in quest of its necessary food. If violently disturbed after a full meal, it is incapable of flight until it has disgorged the contents of its stomach, lightened of which, and freed from their debilitating effects, it is immediately in a condition to soar to such a pitch as, in spite of its magnitude, to become invisible to human sight.

In captivity it appears to have no other desire than that of obtaining its regular supply of food. So long as that is afforded it, it manifests a perfect indifference to the circumstances in which it is placed. An individual has been for three years an inhabitant of the Garden, and was for many years previous in the possession of Joshua Brookes, Esq., by whom it was presented to the Society.—*Tower Menagerie.*

THE CHINCHILLA.

Chinchilla Lanigera.

The peculiar softness and beauty of the fur of the Chinchilla have been so long, so ornamentally, and so comfortably known to our fair countrywomen, that it would be paying their taste and curiosity a sorry compliment to imagine that they have no desire to become acquainted with the animal by which it is furnished. We are happy therefore to to have it in our power to gratify them, as well as the scientific zoologist, by a figure and description of so interesting a creature, the former the only one that has yet been given to the world, and the latter the first that has appeared in our language.

Notwithstanding the extensive trade carried on in its skins, the Chinchilla might have been regarded until the last year almost as an unknown animal: for no modern naturalist, with the exception of the Abbé Molina, a native of Chili, who has written expressly on the Natural History of that country, had seen an entire specimen, living or dead; and the description given in his work added little of truth and much of error to the information that was to be derived from an inspection of the skins themselves in the imperfect state in which they are sent into the market. Still his account contains many particulars relative to the habits of the animal, which are not to be met with elsewhere, and we shall therefore extract it entire; first, however, referring to such scanty notices in the works of former writers as appear to have been founded on original observation.

The earliest account of the Chinchilla with which we have met is contained in Father Joseph Acosta's Natural and Moral History of the East and West Indies, published

at Barcelona, in Spanish, in the year 1591. From an English translation of this work, printed at London, in 1604, we extract the following sentence, which is all that relates to the animal in question. "The Chinchilles is an other kind of small beasts, like squirrels, they have a woonderfull smoothe and soft skinne, which they weare as a healthfull thing to comfort the stomacke, and those parts that have neede of a moderate heate;" [as most "beasts" do; but the concluding part of the extract shows that this is spoken of the human natives, and not of the poor Chinchillas themselves;] "they make coverings and rugges of the haire of these Chinchilles, which are found on the Sierre of Peru."

We find these animals again mentioned, and nearly to the same purpose, in "The Observations of Sir Richard Hawkins, Knight, in his Voyage into the South Sea, An. Dom. 1593," published at London, in a small folio, in the year 1622, and reprinted, three years afterwards, in the fourth part of "Purchas his Pilgrims." This hardy and adventurous seaman appears, notwithstanding the somewhat contemptuous manner in which he speaks of the "princes and nobles" that "laie waite" for these skins, to have been much of the same opinion with regard to their superior quality and comfort. It is worthy of remark that he treats them not as wool, in which light Acosta seems to have regarded them, but as fur. "Amongst others," he says, (showing, by the by, as little respect for the niceties of grammar as the translator above quoted,) "they have little beastes, like unto a squirrell, but that hee is grey, his skinne is the most delicate soft and curious furre that I have seene, and of much estimation, (as is reason,) in the Peru; few of them come into Spaine, because difficult to be come by, for that the princes and nobles laie waite for them, they call this beast Chinchilla, and of them they have great abundance."

In the foregoing quotations the Chinchilla is only said to be like a Squirrel: later writers appear to have confounded them. Thus when Alonso de Ovalle, another Spaniard, whose "Historical Relation of the Kingdom of Chili" was published at Rome in 1646, says that "the Squirrels [Ardas] which are found only in the Valley of Guasco, are ash-coloured, and their skins are in great esteem for the fineness and softness of the fur," he evidently means the Chinchilla; for no species of Squirrel, whose fur is of any value, is found in that country. The same may also be said of an anonymous Italian author, (considered by some bibliographers, but we believe erroneously, to have been the Abbé Vidaure,) who published at Bologna in 1776, a Compendium of the Geographical, Natural, and Civil History of the Kingdom of Chili. This writer speaks of the Arda, which is the Spanish word for a Squirrel, as a species of Rat or Campagnol, of the size of a Cat, found only in the province of Copiapo, moderately docile, and covered with ash-coloured wool, as close and delicate as the finest cotton.

But this confusion of species becomes tolerable if compared with another into which the same author has fallen when he speaks of the Chinche, the most insupportably offensive of all stinking animals, as having a remarkably soft fur, which is made into coverlets for beds. The responsibility, however, for the latter error must rest with Buffon; who, after quoting Feuillée's excellent description of that abominable beast, adds: "it appears to me that the same animal is indicated by Acosta under the name of Chinchilla, which is not very different from that of Chinche." How this great naturalist could have been led to confound two animals so essentially distinct in every particular, of one of which he had a specimen in good preservation, while the skins of the other, mutilated it is true, but still distinctly recognisable, might probably have been seen in the warehouse of every furrier, we are at a loss to conjecture. The circumstance itself affords a striking proof of the obscurity in which the history of the Chinchilla was then involved, when the mere similarity of sound in the names was the solitary argument advanced in favour of so unfortunate a conjecture. The error was corrected by D'Azara, who is, however, himself mistaken in regarding the Chinche of Feuillée and Buffon as his Yagouare, and who adds nothing to what was already known with respect to the true Chinchilla.

Molina's Essay on the Natural History of Chili was originally published in Italian at Bologna in 1782. In the preface the author candidly confesses that his materials are not sufficiently complete for a general Natural History of the country. They appear indeed to have consisted partly of the recollections of a vigorous mind, and partly of such imperfect notes as could only be made use of in the way of hints to recall to the memory some of those minor points which might otherwise have escaped it. It is obvious that under such circumstances, however careful the writer may have been to avoid mistakes, it is impossible to place in his descriptions that implicit confidence to which his acknowledged good faith would otherwise entitle him. In this work he describes the Chinchilla as a species of the Linnæan genus Mus, under the name of Mus laniger, by which appellation it was received into Gmelin's Edition of the Systema Naturæ, and continued to be known among naturalists, until M. Geoffroy-Saint-Hilaire suggested that it ought rather to be regarded as a species of the genus separated by him from the Rats under the name of Hamster. This opinion was immediately adopted by zoologists, and seems to have been taken up by Molina himself, in a second edition of his Essay, published in 1810, which contains some trifling additions to his former article on the Chin-

chilla. We proceed to translate from the latter those passages which relate to the subject.

"The Chinchilla," he says, "is another species of field-rat, in great estimation for the extreme fineness of its wool, if a rich fur as delicate as the silken webs of the garden spiders may be so termed. It is of an ash-grey, and sufficiently long for spinning. The little animal which produces it is six inches long from the nose to the root of the tail, with small pointed ears, a short muzzle, teeth like the house-rat, and a tail of moderate length, clothed with a delicate fur. It lives in burrows underground in the open country of the northern provinces of Chili, and is very fond of being in company with others of its species. It feeds upon the roots of various bulbous plants which grow abundantly in those parts; and produces twice a year five or six young ones. It is so docile and mild in temper that if taken into the hands it neither bites nor tries to escape; but seems to take a pleasure in being caressed. If placed in the bosom it remains there as still and quiet as if it were in its own nest. This extraordinary placidity may possibly be rather due to its pusillanimity, which renders it extremely timid. As it is in itself peculiarly cleanly, there can be no fear of its soiling the clothes of those who handle it, or of its communicating any bad smell to them, for it is entirely free from that ill odour which characterizes the other species of Rats. For this reason it might well be kept in the houses with no annoyance and at a trifling expense, which would be abundantly repaid by the profits on its wool. The ancient Peruvians, who were far more industrious than the modern, made of this wool coverlets for beds and valuable stuffs. There is found," he adds, "in the same northern provinces, another little animal with fine wool called the Hardilla, which is variously described by those who have seen it; but as I have never observed it myself, I cannot determine to what genus it belongs." There can be little doubt, we should imagine, that this animal is identical with the Chinchilla, the latter, as we have already seen, being frequently spoken of by the name of Arda, the same with Harda, of which Hardilla is only the diminutive.

We shall conclude our quotations of former notices with the following extract from Schmidtmeyer's "Travels into Chile over the Andes," London, 4to., 1824; which furnishes some particulars, apparently derived from the traveller's own observation, that had not been touched upon by previous writers. "The Chinchilla," he says, "is a woolly field-mouse, which lives under ground, and chiefly feeds on wild onions. Its fine fur is well known in Europe; that which comes from Upper Peru is rougher and larger than the Chinchilla of Chile, but not always so beautiful in its colour. Great numbers of these animals are caught in the neighbourhood of Coquimbo and Copiapo, generally by boys with dogs, and sold to traders who bring them to Santiago and Valparayso, from whence they are exported. The Peruvian skins are either brought to Buenos Ayres from the eastern parts of the Andes, or sent to Lima. The extensive use of this fur has lately occasioned a very considerable destruction of the animals."

Such is the history of our knowledge of this interesting animal until the arrival of a living specimen which was brought to England by the late expedition to the north-west coast of America, under the command of Captain Beechey, and by him presented to the Zoological Society. An entire skin, rendered particularly valuable in consequence of its having the skull preserved in it, was at the same time brought home by Mr. Collie, the surgeon of Captain Beechey's vessel, and deposited in the collection of the British Museum. We have thus fortunately placed within our reach the means of correcting many of the errors into which former writers have fallen with regard to it, and of giving a more complete description of it than has yet been laid before the world.

To begin with its generic characters. The slightest inspection of its teeth was sufficient to prove that it could no longer be associated with the groups in which it had been previously placed; and a closer examination served only to confirm the idea that it was equally distinct in character from every other known genus of Rodentia. In proof of the former part of this assertion we borrow from the Zoological Journal Mr. Yarrell's description of these organs, taken from the specimen before mentioned, with one indispensable alteration, of which that gentleman has himself since seen the necessity. He there describes the teeth as consisting of two incisors in each jaw, and of four molars on either side; the three anterior of the upper jaw formed of two parallel bony portions with three alternating lines of enamel, and the fourth having an additional portion of bone and enamel, but smaller than the two principal ones. The direction of the parallel laminæ of these teeth is not at right angles with the line of the maxillary bone, but inclining obliquely from without backwards; and the molars of the lower jaw are placed still more obliquely than those of the upper.

But the examination on which this statement was founded was made under circumstances of great disadvantage, inasmuch as it is almost impossible to obtain a distinct view of the teeth of any animal while the skull remains within the skin, from which it was of course not allowable in the present instance to remove it. The necessity for the alteration to which we have before alluded has been rendered obvious only since the skin was transferred to the British Museum, by the extraction from the lower jaw of the two anterior molars of the right side, which are now shown

each to possess a smaller third lamina of bone, with its corresponding enamel, placed in front of, and not projecting so far externally as, the two remaining portions of the tooth. This third lamina is separated from that next to it by a deep groove on the inner side, but on the outer there is no indication of such a division; the inner surface of each of these teeth consequently offers two such grooves, while the outer presents no more than one.

In the observations appended to his account of the teeth Mr. Yarrell appears to consider the Chinchilla as nearly allied to Mr. Brooke's new genus Lagostomus, of which a figure and description are contained in the last published part (the first of the sixteenth volume) of the Linnæan Transactions; and the general resemblance of form, together with the characters of the teeth as given in that notice, unquestionably warrant at least a close approximation. But we apprehend that the alteration above made in the description of the teeth of the Chinchilla, together with the discrepancy in the number of the toes, which in our animal are four on the hind feet, while in Lagostomus they are but three, will be considered fully sufficient to establish a generic difference between them. The close affinity subsisting between these animals has been subsequently recognised by M. Cuvier, from the very imperfect materials in his possession, consisting only of mutilated skins of the one and drawings and descriptions of the other. In the new edition, just published, of his Règne Animal he regards them both as decidedly forming part of the same genus; but does not venture, until he shall have seen their teeth, to determine their position in the series, which he considers so uncertain as to render it doubtful whether they approach most nearly to the Guinea-pigs, the Lagomys or the Rats. In the removal of these doubts we are happy to assist by furnishing the proof that, although generically distinct, they both evidently belong to the same natural tribe, and contribute, along with Lagomys and Pedetes, to establish a connexion between the otherwise widely separated families of the Hares and the Jerboas.

The length of the body in our specimen is about nine inches, and that of the tail nearly five. Its proportions are close-set, and its limbs comparatively short, the posterior being considerably longer than the anterior. The fur is long, thick, close, woolly, somewhat crisped and entangled together, grayish or ash-coloured above, and paler beneath. The form of the head resembles that of the Rabbit; the eyes are full, large, and black; and the ears broad, naked, rounded at the tips, and nearly as long as the head. The moustaches are plentiful and very long, the longest being twice the length of the head, some of them black, and others white. Four short toes, with a distinct rudiment of a thumb, terminate the anterior feet; and the posterior are furnished with the same number, three of them long, the middle more produced than the two lateral ones, and the fourth, external to the others, very short and placed far behind. On all these toes the claws are short, and nearly hidden by tufts of bristly hairs. The tail is about half the length of the body, of equal thickness throughout, and covered with long bushy hairs; it is usually kept turned up towards the back, but not reverted as in the Squirrels.

To the account of its habits given by Molina we can only add that it usually sits upon its haunches, and is even able to raise itself up and stand upon its hinder feet. It feeds in a sitting posture, grasping its food and conveying it to its mouth by means of its fore paws. In its temper it is generally mild and tractable, but it will not always suffer itself to be handled without resistance, and sometimes bites the hand which attempts to fondle it when not in a humour to be played with.

Although a native of the alpine valleys of Chili, and consequently subjected in its own country to the effects of a low temperature of the atmosphere, against which its thick coat affords an admirable protection; it was thought necessary to keep it during the winter in a moderately warm room, and a piece of flannel was even introduced into its sleeping apartment for its greater comfort. But this indulgence was most pertinaciously rejected, and as often as the flannel was replaced, so often was it dragged by the little animal into the outer compartment of its cage, where it amused itself with pulling it about, rolling it up and shaking it with its feet and teeth. In other respects it exhibits but little playfulness, and gives few signs of activity; seldom disturbing its usual quietude by any sudden or extraordinary gambols, but occasionally displaying strong symptoms of alarm when startled by any unusual occurrence. It is, in fact, a remarkably tranquil and peaceable animal unless when its timidity gets the better of its gentleness.

A second individual of this interesting species has lately been added to the collection by the kindness of Lady Knighton, in whose possession it had remained for twelve months previously to her presenting it to the Society. This specimen is larger in size and rougher in its fur than the one above described; its colour is also less uniformly gray, deriving a somewhat mottled appearance from the numerous small blackish spots which are scattered over the back and sides. It is possible that this may be the Peruvian variety, mentioned in the extract from Schmidtmeyer's Travels, as furnishing a less delicate and valuable fur than the Chilian animal. It is equally good tempered and mild in its disposition; and, probably in consequence of having been domiciliated in a private house instead of having been exhibited in a public collection, is much more tame and playful. In its late abode it was frequently suffered to run about the

room, when it would show off its agility by leaping to the height of the table. Its food consisted principally of dry herbage, such as hay and clover, on which it appears to have thriven greatly. That of the Society's original specimen has hitherto been chiefly grain of various kinds, and succulent roots.

When the new comer was first introduced into Bruton Street, it was placed in the same cage with the other specimen; but the latter appeared by no means disposed to submit to the presence of the intruder. A ferocious kind of scuffling fight immediately ensued between them, and the latter would unquestionably have fallen a victim, had it not been rescued from its impending fate. Since that time they have inhabited separate cages, placed side by side; and although the open wires would admit of some little familiarity taking place between them, no advances have as yet been made on either side. Such an isolated fact can, of course, have little weight in opposition to the testimony of Molina that the Chinchilla is fond of company. It is nevertheless a remarkable circumstance, and deserves to be mentioned in illustration of the habits of these animals.

NATIONAL MUSEUM AT PARIS.

Some Details respecting the Garden of Plants and the National Museum at Paris. By Mrs. R. Lee, (late Mrs. Bowdich.)

Sir,—I have much pleasure in obeying your request, and sending you a few details concerning the Jardin du Roi in Paris, of which I have been an inmate during the last month.

I was much concerned to find that the lions, panthers, &c. with some of which I had long been acquainted, were all dead; and it is said that the classical-looking building they inhabited was unfavourable to their nature. Animals of this kind require not only warmth and shelter, but society; but in these dens a constant current of air rushes through, and the animals are totally excluded from the sight of each other. Still, however, there are some very fine bears of different species; some hyænnas, one of which is very gentle, and holds his head close to the bars to be caressed; and some wolves. Among the latter is one whose hair is perfectly black, and shines like floss silk. He was brought when very young (I could almost have said a puppy), and presented to Baron Cuvier's daughter-in-law, who finding him so tame, desired he might have a dog for a companion, and be fed entirely on broth and cooked meat. Her orders have been obeyed, and the animal retains all his gentleness and docility; he never sees her but he stretches his paws through the bars to be shaken, and when she lets him loose he lies down before her, licks her feet, and shows every mark of joy and affection. In a small room, not open to public view, is a curious collection of squirrels, rackoons, martens, ichneumons, and some dogs, whose monstrous birth gives them a place there, in order to aid the researches of M. Geoffroy St. Hilaire.

But the great attraction—the queen of the garden—is the giraffe, to whom I paid frequent visits. She is the only survivor of the three which left Africa much about the same time, and inhabits the large round building in the centre of the menagerie, called the Rotonde. Great care is taken to shelter her from the cold, and in the winter she has a kind of hood and cape, which reach the length of her neck, and a body cloth, all made of woollen materials. She is only suffered to walk in her little park when the sun shines upon it, and if care and attention can compensate for the loss of liberty, she ought to be the happiest of her kind. She stands about 12½ feet high, and her skin, with its light brown spots, shines like satin; but I confess I was disappointed with regard to her beauty. She looks best when lying down, or standing perfectly upright, in which posture she is very dignified; but the moment she moves she becomes awkward, in consequence of the disproportion of the hinder parts of her body, and the immense length of her neck, which, instead of being arched, forms an angle with her shoulders. When she gallops, her hind feet advance beyond those in front, and the peculiarity of gait caused by moving the hind and fore feet on the same side, at the same time, is very striking. She has great difficulty in reaching the ground with her mouth, and was obliged to make two efforts to separate her fore legs before she could reach a cistern placed on the pavement. Her head is of remarkable beauty, and the expression of her full black eyes is mild and affectionate; her tongue is long, black and pointed. She is extremely gentle, yet full of frolic and animation, and when walking in the menagerie, her keeper is obliged to hold her head to prevent her biting off the young branches of the trees. Her great delight, however, is to eat rose leaves, and she devours them with the greatest avidity. The African cows, with humps on their shoulders, who supplied her with milk during her passage to Europe, are as gentle as their nursling, and when feeding her they come and softly push your elbows to have their share. Turning from the giraffe one day, and proceeding a yard or two in order to satisfy them, I suddenly felt something overshadow me, and this was no less than the giraffe, who, without quitting her place, bent her head over mine, and helped herself to the carrots in my hand. Her keeper, named Ati,

and from Darfur, is a tall well-proportioned black, and at his own request a little gallery has been erected for him in the stable of his charge, where he sleeps and keeps all his property. When in attendance he dresses in the turban, vest, and full trowsers of his country, but when he walks into Paris he assumes the European costume, for in his native garb all the children in the streets recognise him, and calling out, "*Ati! Ati! comment va la giraffe?*" hurt his consequence. He is to be found every Sunday evening at one of the Guinguettes in the neighbourhood, dancing with all his might, and during the week he devotes his leisure to the acquirement of reading and writing.

The two elephants are much grown, and with the Asiatic they do not seem to make much progress; but the African is become very interesting; she performs various salutations and manœuvres, obeys the voice of her keeper, kneels down to take him on her back, and seldom requires any other chastisement than a pull of one of her ears, which are very much larger than those of her Indian brother.

Two very beautiful aviaries have been completed since my last visit to the Jardin. The one is appropriated to birds of prey, and contains some noble specimens of owls, eagles, and vultures; among the latter is the great Condor of the Andes (Vúltur Gryphus), which requires double the space allotted to any of the others. The second aviary contains many rare species of pheasants and other birds, and both of them have not only covered places for shelter, and stoves for heating them, but a large space covered with iron network, in which the thousands who weekly crowd to see them can watch their movements without the least difficulty. Near these are the parks appropriated to peacocks, domestic fowls, &c. and in which the crown and Numidian cranes, and the secretary bird, stalk about and dance at sunset, as if under their native skies. The various kinds of deer, the chamois, and other goats, are in high health; the beavers are thriving, as well as all the known species of lama. I was astonished at the fury with which these mild-looking animals fight; and on one occasion having caused them to be separated, I was much amused at the rage with which they pushed their noses through the railings, till they touched, though their attempts to bite were fruitless.

Without actual study, it would be difficult to ascertain the additions made of late years to the collection of comparative anatomy. Several rooms have been added since my first acquaintance with it, in 1819, and it is yearly receiving new treasures from travellers, or the efforts of Baron Cuvier, who may be said to have created this part of the establishment. The upper portion, containing the preparations in spirits, &c. separated bones, skulls, teeth, and the skeletons of the smaller animals, seems to be crowded; and the skeletons of the whales below, among the larger objects, excited my astonishment, that the whole Parisian world should have run mad after *la baleine des Pays Bas*, when those of the Jardin du Roi are nearly as large, and much more interesting, from the whalebone having been preserved, and from the correct manner in which the parts have been put together.

The collection of stuffed animals, at the first *coup d' œil*, more completely conveys an idea of its immense riches than any other portion of the establishment. To see thousands of animals in their living attitudes, so happily prepared as to appear in actual movement, and then to pause and find all still and immoveable, gives an idea of enchantment which it is difficult to shake off, till increasing admiration at every step supersedes all other feelings, and till we finally turn from it lost in wonder at the magnificence of creation, and adore the mighty Hand which has formed these endless varieties, and yet bound the whole together in one common link. The division allotted to the stuffed deer, &c. has received several curious additions of the antelope kind; and there are two tufts of hair, said to belong to the tails of the grunting cow of the East, which is such an object of curiosity to naturalists, and which tufts are all that has yet been brought to Europe to prove its existence. The giraffes, camels, and oxen still stand together in this room, and the enormous basking shark has been hoisted to the ceiling. But we feel impatient to get to the birds, the arrangement of which, from their size, is more complete than can be admitted among the quadrupeds. The first cases contain the diurnal birds of prey; where the gypactos of the Alps seems in the act of pouncing on its victim, the secretary bird appears to have walked in from the menagerie, and the falcon ready to soar from the wrist of the huntsman. The owls of all countries succeed these; and passing by the splendid parrots, parroquets, toucans, &c. we stop for a long time before the Passeres. In this order every idea of exquisite form, grace, delicacy, brilliancy, and harmony of colouring seems verified. The lyretails (Mœnúra), the parasol birds (Cephalópterus), the lovely birds of paradise, the sugar birds, the gems of humming-birds blazing in the light, seem each to demand a whole day's admiration; and then come the Gallinàceæ, with the red-breasted pigeon, looking as if an arrow had just pierced her heart: the horned and argus pheasants, &c. The ostrich, the rose colored flamingo, the sacred and the scarlet ibis; the kamichi, said to bleed his sick companions with the spur upon his wing, all take their place among the Grállæ: and next to these are the Palmipedes, from the far-famed albatross, the awkward-looking penguin, the frigate bird, the stupid boobies, to the common duck.

The two end rooms are still full of bats, quadrupeds, and

BLUE BIRD ROBIN

monkeys. The centre of the rooms is filled with cases of Mollúsca of the rarest and most beautiful species, both fossil and recent; the animals preserved in spirits occupy some of the lower shelves; the rest are filled with corallines and sponges; the cases above are lined with insects.

Descending the staircase, we pass through those mighty ruins of former ages, the fossils, chiefly collected by Baron Cuvier; after which come the rocks and minerals. The reptiles, which cover the sides and ceilings of the next apartment, have lately been much extended; and the former library having been appropriated to ichthyology, the books have been moved to the rooms of a deceased professor, and their place is now wholly occupied by fishes. Below these are three entirely new rooms, formed by turning the porter of the gate in the Rue du Jardin du Roi out of his habitation, and converting that and some lecture rooms into a gallery for the heavier quadrupeds, such as elephants, hippopotami, &c. on the ground floor.

The galleries of botany are scarcely big enough to contain the piles of dried plants brought home by the naturalists of the expeditions of discovery; and the collection of woods and dried seeds bids fair very soon to exceed the limits assigned to it. The School of Botany, so beautifully arranged according to the natural system, is three times as large as it was six years back. The wet summer has much injured the parterres; still, however, the daturas have been placed outside the green-houses; the salvias, amounting to large shrubs, were still in blossom; and the flower-garden, the garden of naturalization, and the medicinal parterres, were all blooming. In short, with the exception of living Carnivora, every department of this wonderful establishment has made the most astonishing progress, even within the last few years, and is now so perfect that we almost wish the treasures of nature exhausted, for fear the least alteration for the reception of additions should be detrimental to its beauty.

I cannot suppose it possible for an English amateur of natural history to turn from this little world of science and wonder without a sigh of regret—without dwelling on the causes, whatever they may be, which keep his own country in such deep arrears in this respect. That England, which perfects not only her own undertakings, but the undertakings of other nations, with a hundred fold the opportunity in her commercial connections, which preclude even the necessity of sending out travellers on purpose—that England should be thus outdone by her less enterprising neighbour, is a fact at which I cannot help grieving, but which I do not presume to investigate. I am, Sir, &c.

S. Lee.

27 *Burton Street, Nov.* 19.

ROBIN.

TURDUS MIGRATORIUS.

[Plate XII.]

Linn. *Syst.* i, *p.* 292, 6.—*Turdus Canadensis*, Briss. ii, *p.* 225, 9.—*La Litorne de Canada*, Buff. iii, *p.* 307.—*Grive de Canada*, *Pl. Enl.* 556, 1.—*Fieldfare of Carolina*, Cat. *Car.* 1, 29.—*Red-breasted Thrush*, *Arct. Zool.* ii, *No.* 196.—Lath. *Syn.* ii, *p.* 26.—Bartram, *p.* 290.—J. Doughty's *collection.*

This well known bird, being familiar to almost every body, will require but a short description. It measures nine inches and a half in length; the bill is strong, an inch long, and of a full yellow, though sometimes black, or dusky near the tip of the upper mandible; the head, back of the neck, and tail is black; the back and rump an ash colour; the wings are black edged with light ash; the inner tips of the two exterior tail feathers are white; three small spots of white border the eye; the throat and upper part of the breast is black, the former streaked with white; the whole of the rest of the breast, down as far as the thighs, is of a dark orange; belly and vent white, slightly waved with dusky ash; legs dark brown; claws black and strong. The colours of the female are more of the light ash, less deepened with black; and the orange on the breast is much paler and more broadly skirted with white. The name of this bird bespeaks him a bird of passage, as are all the different species of Thrushes we have; but the one we are now describing being mote unsettled, and continually roving about from one region to another, during fall and winter, seems particularly entitled to the appellation. Scarce a winter passes but innumerable thousands of them are seen in the lower parts of the whole Atlantic States, from New Hampshire to Carolina, particularly in the neighbourhood of our towns; and from the circumstance of their leaving, during that season, the country to the north-west of the great range of the Alleghany, from Maryland northward, it would appear that they not only migrate from north to south, but from west to east, to avoid the deep snows that generally prevail on these high regions for at least four months in the year.

The Robin builds a large nest, often on an apple tree, plasters it in the inside with mud, and lines it with hay or fine grass. The female lays five eggs of a beautiful sea green. Their principal food is berries, worms and catterpillars. Of the first he prefers those of the sour gum (*Nyssa sylvatica*). So fond are they of Gum berries, that wherever there is one of these trees covered with fruit, and

flocks of Robins in the neighbourhood, the sportsman need only take his stand near it, load, take aim, and fire; one flock succeeding another with little interruption, almost the whole day; by this method prodigious slaughter has been made among them with little fatigue. When berries fail they disperse themselves over the fields, and along the fences, in search of worms and other insects. Sometimes they will disappear for a week or two, and return again in greater numbers than before; at which time the cities pour out their sportsmen by scores, and the markets are plentifully supplied with them at a cheap rate. In January, 1807, two young men, in one excursion after them, shot thirty dozen. In the midst of such devastation, which continued many weeks, and by accounts extended from Massachusetts to Maryland, some humane person took advantage of a circumstance common to these birds in winter, to stop the general slaughter. The fruit called poke-berries (*Phytolacca decandra*, Linn.) is a favourite repast with the Robin, after they are mellowed by the frost. The juice of the berries is of a beautiful crimson, and they are eaten in such quantities by these birds, that their whole stomachs are strongly tinged with the same red colour. A paragraph appeared in the public papers, intimating, that from the great quantities of these berries which the Robins had fed on, they had become unwholesome, and even dangerous food; and that several persons had suffered by eating of them. The strange appearance of the bowels of the birds seemed to corroborate this account. The demand for, and use of them ceased almost instantly; and motives of self-preservation produced at once what all the pleadings of humanity could not effect.* When fat they are in considerable esteem for the table, and probably not inferior to the *turdi* of the ancients, which they bestowed so much pains on in feeding and fattening. The young birds are frequently and easily raised, bear the confinement of the cage, feed on bread, fruits, &c. sing well, readily learn to imitate parts of tunes, and are very pleasant and cheerful domestics. In these I have always observed that the orange on the breast is of a much deeper tint, often a dark mahogany or chesnut colour, owing no doubt to their food and confinement.

The Robin is one of our earliest songsters; even in March, while snow yet dapples the fields, and flocks of them are dispersed about, some few will mount a post or stake of the fence, and make short and frequent attempts at their song. Early in April, they are only to be seen in pairs, and deliver their notes with great earnestness, from the top of some tree detached from the woods. This song has some resemblance to, and indeed is no bad imitation of the notes of the Thrush or Thrasher (*Turdus rufus*); but if deficient in point of execution, he possesses more simplicity; and makes up in zeal what he wants in talent; so that the notes of the Robin, in spring, are universally known, and as universally beloved. They are as it were the prelude to the grand general concert, that is about to burst upon us from woods, fields, and thickets, whitened with blossoms, and breathing fragrance. By the usual association of ideas, we therefore listen with more pleasure to this cheerful bird than to many others possessed of far superior powers, and much greater variety. Even his nest is held more sacred among school boys than that of some others; and while they will exult in plundering a Jay's or a Cat-bird's, a general sentiment of respect prevails on the discovery of a Robin's. Whether he owes not some little of this veneration to the well known and long established character of his namesake in Britain, by a like association of ideas, I will not pretend to determine. He possesses a good deal of his suavity of manners, and almost always seeks shelter for his young in summer, and subsistence for himself in the extremes of winter, near the habitations of man.

The Robin inhabits the whole of North America from Hudson's Bay to Nootka Sound, and as far south as Georgia, though they rarely breed on this side the mountains farther south than Virginia. Mr. Forster says, that about the beginning of May they make their appearance in pairs at the settlements of Hudson's Bay, at Severn river; and adds, a circumstance altogether unworthy of belief, viz. that at Moose fort they build, lay, and hatch in fourteen days! but that at the former place, four degrees more north, they are said to take twenty-six days.* They are also common in Newfoundland, quitting these northern parts in October. The young during the first season are spotted with white on the breast, and at that time have a good deal of resemblance to the Fieldfare of Europe.

Mr. Hearne informs us, that the red-breasted Thrushes, are commonly called at Hudson's Bay the Red-birds; by some the Black-birds, on account of their note; and by others the American Fieldfares. That they make their appearance at Churchill river about the middle of May, and migrate to the south early in the fall. They are seldom seen there but in pairs; and are never killed for their flesh except by the Indian boys.†

Several authors have asserted, that the Red-breasted Thrush cannot brook the confinement of the cage; and never sings in that state. But, except the Mocking-bird (*Turdus polyglottos*), I know of no native bird which

* Governor Drayton, in his "View of South Carolina," p. 86, observes, that "the Robins in winter devour the berries of the Bead tree (*Melia Azedarach*,) in such large quantities, that after eating of them they are observed to fall down, and are readily taken. This is ascribed more to distension from abundant eating than from any deleterious qualities of the plant." The fact however, is, that they are literally choked, many of the berries being too large to be swallowed.

* Phil. Trans. lxii. 399.

† Journey to the Northern Ocean, p. 418, quarto. Lond. 1795.

is so frequently domesticated, agrees better with confinement, or sings in that state more agreeably than the Robin. They generally suffer severely in moulting time, yet often live to a considerable age. A lady who resides near Tarrytown, on the banks of the Hudson, informed me, that she raised, and kept one of these birds for seventeen years; which sung as well, and looked as sprightly, at that age as ever; but was at last unfortunately destroyed by a cat. The morning is their favourite time for song. In passing through the streets of our large cities, on Sunday, in the months of April and May, a little after day-break, the general silence which usually prevails without at that hour, will enable you to distinguish every house where one of these songsters resides, as he makes it then ring with his music.

Not only the plumage of the Robin, as of many other birds, is subject to slight periodical changes of colour, but even the legs, feet, and bill; the latter, in the male, being frequently found tipt and ridged for half its length with black. In the depth of winter their plumage is generally best; at which time the full-grown bird, in his most perfect dress, appears as exhibited in the plate.

BLUE BIRD.

S. SIALIS.

[Plate XII.]

Le Rouge gorge bleu, Buffon, v. 212, *Pl. Enl.* 390.—*Blue Warbler*, Lath. II, 446.—Catesb. I, 47.—*Motacilla sialis*, Linn. *Syst.* 336.—Bartram, *p.* 291.—*Motacilla sialis*, Linn. *Syst.* I, *p.* 187, Ed. 10.—Gmel. *Syst.* I, *p.* 989.—*Sylvia sialis*, Lath. *Ind. Orn.* II, 522.—Vieillot, *Otis. de l'Am. Sept. pl.* 101, *male;* 102, *female;* 103, *young.*—*La Gorge rouge de la Caroline*, Buff. *Pl. Enl.* 396, *fig.* 1, *male; fig.* 2, *female.*—J. Doughty's *collection.*

The pleasing manners and sociable disposition of this little bird entitle him to particular notice. As one of the first messengers of spring, bringing the charming tidings to our very doors, he bears his own recommendation always along with him, and meets with a hearty welcome from every body.

Though generally accounted a bird of passage, yet so early as the middle of February, if the weather be open, he usually makes his appearance about his old haunts, the barn, orchard and fence posts. Storms and deep snows sometimes succeeding, he disappears for a time; but about the middle of March is again seen, accompanied by his mate, visiting the box in the garden, or the hole in the old apple-tree, the cradle of some generations of his ancestors. "When he first begins his amours," says a curious and correct observer, "it is pleasing to behold his courtship, his solicitude to please and to secure the favour of his beloved female. He uses the tenderest expressions, sits close by her, caresses and sings to her his most endearing warblings. When seated together, if he espies an insect delicious to her taste, he takes it up, flies with it to her, spreads his wing over her and puts it in her mouth."* If a rival makes his appearance, (for they are ardent in their loves), he quits her in a moment, attacks and pursues the intruder, as he shifts from place to place, in tones that bespeak the jealousy of his affection, conducts him with many reproofs beyond the extremities of his territory, and returns to warble out his transports of triumph beside his beloved mate. The preliminaries being thus settled, and the spot fixed on, they begin to clean out the old nest, and the rubbish of the former year, and to prepare for the reception of their future offspring. Soon after this another sociable little pilgrim (*Motacilla domestica*, House Wren), also arrives from the south, and finding such a snug birth pre-occupied, shows his spite, by watching a convenient opportunity, and in the absence of the owner popping in and pulling out sticks; but takes special care to make off as fast as possible.

The female lays five, and sometimes six eggs, of a pale blue colour; and raises two, and sometimes three broods in a season; the male taking the youngest under his particular care while the female is again sitting. Their principal food are insects, particularly large beetles, and others of the coleopterous kinds that lurk among old dead and decaying trees. Spiders are also a favourite repast with them. In fall they occasionally regale themselves on the berries of the sour gum; and as winter approaches, on those of the red cedar, and on the fruit of a rough hairy vine that runs up and cleaves fast to the trunks of trees. Ripe persimmons is another of their favourite dishes; and many other fruits and seeds which I have found in their stomachs at that season, which, being no botanist, I am unable to particularize. They are frequently pestered with a species of tape-worm, some of which I have taken from their intestines of an extraordinary size, and in some cases in great numbers. Most other birds are also plagued with these vermin; but the Blue-bird seems more subject to them than any I know, except the Woodcock. An account of the different species of vermin, many of which I doubt not are non-descripts, that infest the plumage and intestines of our birds, would of itself form an interesting publication; but as this belongs

* Letter from Mr. William Bartram to the author.

more properly to the entomologist, I shall only, in the course of this work, take notice of some of the most remarkable; and occasionally represent them in the same plate with those birds on which they are usually found.

The usual spring and summer song of the Blue-bird is a soft, agreeable and oft-repeated warble, uttered with open quivering wings, and is extremely pleasing. In his motions and general character he has great resemblance to the Robin Red-breast of Britain; and had he the brown olive of that bird instead of his own blue, could scarcely be distinguished from him. Like him he is known to almost every child; and shows as much confidence in man by associating with him in summer, as the other by his familiarity in winter. He is also of a mild and peaceful disposition, seldom fighting or quarrelling with other birds. His society is courted by the inhabitants of the country, and few farmers neglect to provide for him, in some suitable place, a sung little summer house, ready fitted and rent free. For this he more than sufficiently repays them by the cheerfulness of his song, and the multitude of injurious insects which he daily destroys. Towards fall, that is in the month of October, his song changes to a single plaintive note, as he passes over the yellow, many coloured woods; and its melancholy air recals to our minds the approaching decay of the face of nature. Even after the trees are stript of their leaves, he still lingers over his native fields, as if loth to leave them. About the middle or end of November few or none of them are seen; but with every return of mild and open weather, we hear his plaintive note amidst the fields, or in the air, seeming to deplore the devastations of winter. Indeed he appears scarcely ever totally to forsake us; but to follow fair weather through all its journeyings till the return of spring.

The Blue-bird, in summer and fall, is fond of frequenting open pasture fields; and there perching on the stalks of the great *mullein*, to look out for passing insects. A whole family of them are often seen, thus situated, as if receiving lessons of dexterity from their more expert parents, who can espy a beetle crawling among the grass, at a considerable distance; and after feeding on it, instantly resume their former position. But whoever informed Dr. Latham that "this bird is never seen on trees, though it makes its nest in the holes of them!" might as well have said, that the Americans are never seen in the streets, though they build their houses by the sides of them. For what is there in the construction of the feet and claws of this bird to prevent it from perching? Or what sight more common to an inhabitant of this country than the Blue-bird perched on the top of a peach or apple-tree; or among the branches of those reverend broadarmed chesnut trees, that stand alone in the middle of our fields, bleached by the rains and blasts of ages?

The Blue-bird is six inches and three quarters in length, the wings remarkably full and broad; the whole upper parts are of a rich sky blue, with purple reflections; the bill and legs are black; inside of the mouth and soles of the feet yellow, resembling the colour of a ripe persimmon; the shafts of all the wing and tail feathers are black; throat, neck, breast, and sides partially under the wings, chesnut; wings dusky black at the tips; belly and vent white; sometimes the secondaries are exteriorly light brown, but the bird has in that case not arrived at his full colour. The female is easily distinguished by the duller cast of the back, the plumage of which is skirted with light brown, and by the red on the breast being much fainter, and not descending near so low as in the male; the secondaries are also more dusky. This species is found over the whole United States; in the Bahama islands where many of them winter; as also in Mexico, Brazil, and Guiana.

Mr. Edwards mentions that the specimen of this bird which he was favoured with, was sent from the Bermudas; and as these islands abound with the cedar, it is highly probable that many of those birds pass from our continent thence, at the commencement of winter, to enjoy the mildness of that climate as well as their favourite food.

As the Blue-bird is so regularly seen in winter, after the continuance of a few days of mild and open weather, it has given rise to various conjectures as to the place of his retreat. Some supposing it to be in close sheltered thickets, lying to the sun; others the neighbourhood of the sea, where the air is supposed to be more temperate, and where the matters thrown up by the waves furnish him with a constant and plentiful supply of food. Others trace him to the dark recesses of hollow trees, and subterraneous caverns, where they suppose he dozes away the winter, making, like Robinson Crusoe, occasional reconnoitering excursions from his castle, whenever the weather happens to be favourable. But amidst the snows and severities of winter, I have sought for him in vain in the most sheltered situations of the middle States; and not only in the neighbourhood of the sea, but on both sides of the mountains. I have never, indeed, explored the depths of caverns in search of him, because I would as soon expect to meet with tulips and butterflies there, as Blue-birds, but among hundreds of woodmen, who have cut down trees of all sorts, and at all seasons, I have never heard one instance of these birds being found so immured in winter; while in the whole of the middle and eastern States, the same general observation seems to prevail that the Blue-bird always makes his appearance in winter after a few days of mild and open weather. On the other hand, I have myself found them numerous in the woods of North and South Carolina, in the depth of winter, and I have also been assured by different gentlemen of re-

spectability, who have resided in the islands of Jamaica, Cuba, and the Bahamas and Bermudas, that this very bird is common there in winter. We also find, from the works of Hernandes Piso and others, that it is well known in Mexico, Guiana, and Brazil; and if so, the place of its winter retreat is easily ascertained, without having recourse to all the trumpery of holes and caverns, torpidity, hybernation, and such ridiculous improbabilities.

Nothing is more common in Pennsylvania than to see large flocks of these birds in spring and fall, passing, at considerable heights in the air; from the south in the former, and from the north in the latter season. I have seen, in the month of October, about an hour after sun-rise, ten or fifteen of them descend from a great height and settle on the top of a tall detached tree, appearing, from their silence and sedateness, to be strangers, and fatigued. After a pause of a few minutes they began to dress and arrange their plumage, and continued so employed for ten or fifteen minutes more; then, on a few warning notes being given, perhaps by the leader of the party, the whole remounted to a vast height, steering in a direct line for the south-west. In passing along the chain of the Bahamas towards the West Indies, no great difficulty can occur from the frequency of these islands; nor even to the Bermudas, which are said to be 600 miles from the nearest part of the continent. This may seem an extraordinary flight for so small a bird; but it is nevertheless a fact that it is performed. If we suppose the Blue-bird in this case to fly only at the rate of a mile per minute, which is less than I have actually ascertained him to do over land, ten or eleven hours would be sufficient to accomplish the journey; besides the chances he would have of resting places by the way, from the number of vessels that generally navigate those seas. In like manner two days at most, allowing for numerous stages for rest, would conduct him from the remotest regions of Mexico to any part of the Atlantic States. When the natural history of that part of the continent and its adjacent isles, are better known, and the periods at which its birds of passage arrive and depart, are truly ascertained, I have no doubt but these suppositions will be fully corroborated.

ENCOUNTER WITH A PANTHER.

There is no subject on which the mind dwells with so much interest and intensity of thought, as the retrospect of past life—to call to remembrance the scenes of early youth—that period of existence which was spent in scenes of gaiety and pleasure—exploits, replete with danger—excursions, pregnant with difficulties and hairbreadth escapes

—these fill the mind with a train of thought inexpressibly interesting; and they become tenfold more delightful by the lapse of riper years. To the mind of him whose youthful days have been passed in the lonely wilds of a newly settled country, where every day's experience gave rise to some new event; and ingenuity and prowess were often necessarily placed in competition with the ferocity of savage animals, it is a source of contemplation, embodying in itself

feasts of pleasure, known only to the hunter, after these seasons of adventure are past, and when age, with his hoary locks, unfits him for toilsome enterprise, in which it was once his delight to engage, and his glory to excel. Old age has not yet laid his paralyzing hand on me; still my occupations are changed: instead of the noble forests through which I have roamed in quest of the Bear, the Wolf, and the Panther, it is my lot to trudge the streets of this goodly city, and take my share of the trials and perplexities attendant on a city life; but the reminiscences of those early days come over my mind, with an influence at once salutary and soothing, when it is disturbed by any of those nameless perplexities to which human nature is heir. Under the influence of such feelings I determined (after an absence of several years) to revisit my native town, in the state of New York, and about 150 miles north of Philadelphia—that I engaged an old companion to accompany me once more, on a hunting excursion, the details of which I furnish with pleasure, if you think them sufficiently interesting for your "Cabinet." On arriving at the above mentioned place, two faithful and old companions claimed my particular regard, viz: a Rifle, which had served me in the hour of need, and had slain its thousands before I wielded it, and Lion, the faithful Dog that had never shrunk from danger, nor turned tail on the most savage monsters of the forest. These excited an impatience which could scarcely be restrained, and I eagerly embraced the first opportunity to roam the mountain wilds. My friend, who was ever willing, readily consented to an excursion the next day; but being somewhat indisposed, he did not enter into it with the same spirit which marked his enterprises in former years—he had been repeatedly informed by his men, who were cutting timber on a stream called "Shad Pound Brook," that a Panther had crossed the "Log road" several times during the winter, and as the snow had fallen to a considerable depth, the supposition was, that it could not be far from that place. From the circumstance of their having short legs, they are much averse to travelling far; especially as at this time the depth of snow was eighteen inches, and it must have been hunger alone which urged this animal to travel in search of food. As this county had been hunted over so frequently by my friend and myself, we could judge pretty accurately of the neighbourhood in which the Panther was to be found, and as the mountain next beyond that, on which the men were cutting timber, was the place in which we would most likely find it, we resolved to take the sleigh as far as these men, and then seek the object of our pursuit on foot—we accordingly departed; but on arriving at the spot where we intended leaving our sleigh, found our prospects even more gloomy than we had anticipated. We sank to our knees in the snow at every step; but, as I was anxious to kill something, we persevered with steady pace through many difficulties. We had not proceeded far, however, before fresh tracks of deer appeared; they inclined down the mountain and across the hollow to the next mountain. It was agreed that I should follow until I could get a shot, which, the freshness of the tracks warranted a belief, would soon occur; and that my companion, who was somewhat indisposed, would continue his path alongside the mountain, and under the branches of the hemlock trees, where, the snow being of less depth, made it more agreeable to travel. I followed the tracks for some time, and expected at every step to see them spring up before me. Presently I heard my companion give two *whoops*—this was a signal preconcerted always, one call to ascertain the direction of each other—two in succession was the signal to approach the caller. But such was the intensity of my pursuit after the deer, with the expectation of seeing them every moment, that I should certainly have disregarded the signal, had I not been apprehensive that my friend was overcome with fatigue: this determined me to obey it, when, to my agreeable surprise, I found on reaching him, that he had discovered the Panther's track, and nearly fresh. We set off in eager pursuit, reckless of the snow, and, after proceeding about one mile, saw where it had gone under a ledge of rocks and again came out and made several jumps. Here we thought we had aroused it; consequently the dog was let off in chase; he did not run more than three hundred yards, before he came upon two deer, after which he led off, and could only be recalled by discharging our rifles. We were here disappointed, the cause of the Panther's actions appeared to have been a disposition for play, springing and jumping about voluntarily. After Lion's return, and reloading our rifles, we proceeded. To all appearance, the animal must have made this track but the night previous, as most of their wanderings are during this season. About one mile further we came to another ledge of rocks, two hundred yards in length, and twelve or fifteen feet high, perpendicular, and like a wall—here the Panther had exercised its muscular powers, by springing to the top of these rocks and then to the ground again—thus, when undisturbed, this animal is dissimilar to others, always marking his travels by this kind of deviation, which seems to proceed from mere sportiveness, and is confined to this class; as they are not constructed for running or travelling a great distance, but possess rather great muscular strength, which they often call into exercise by this kind of diversion: the height and distance which a Panther can jump, is really astonishing, when their clumsy appearance is taken into consideration. This ledge of rocks skirted the side of the mountain to the distance of two hundred yards or more; at its termination was a cave, in which we supposed our antagonist had sought a place of repose—the mouth of this cave was an opening four feet high and two broad, the entrance descended gradually to the distance of

six feet, then horizontally about thirty, to the extreme end; the ground outside was perhaps two feet higher than the floor of the den, in consequence of dirt, leaves, and other rubbish accumulating and dropping from the mountain side, and the water, by dripping from the rocks, had descended along the inclined part of the den, and so frozen, as to form a sheet of ice to a considerable depth into it. As we could discover no other opening to the cave but the one already mentioned, nor any track which could prove its departure from that spot, we felt confident that the Panther had taken refuge there. We had now a most formidable antagonist to contend with, and as several years had elapsed since I killed a wild animal, it was a moment of thrilling interest—to destroy an animal like this was the sum total of my wishes, and the highest point to which a hunter desires to attain. I therefore requested of my companion permission to descend (as we were at this time on the ledge of rocks) and shoot the Panther, which I supposed was secreted beneath our feet, and would make his appearance as soon as I approached the spot of his concealment. I accordingly descended, and it was not till then that we were certain he had taken refuge in the den. I approached within twenty feet of the cave, or to a distance which I considered perfectly secure from the creature's jump, in case it made an attempt to come out, or that would give me the advantage of shooting before it could make a spring at me. Having encountered these animals frequently, I was cautious of approaching too near; but my companion, who was still on the ledge of rocks, kept urging me to go up to the mouth of the den and endeavour to see the animal and shoot it; but I replied, "do not push me into difficulties too fast." He answered, that if I did not go to the mouth of the den, he would, and accordingly came down with that intention. Knowing so well the nature of our adversary, we used every precautionary measure, previous to an attack, and commenced clearing the snow from the mouth of the cave, to a distance of twenty feet, so that, in case the Panther attacked us, we could retreat that distance without encumbrance to our feet. When this was done, we commenced pelting the mouth of the cave with snow balls; but it would not excite our enemy to motion. We drew the conclusion, from this circumstance, that the Panther, either from cowardice or security, would not risk an attempt to leave the cave. We approached the opening, and then the animal retired to the depth of its retreat. Our appearance now excited its displeasure, which was manifested by tremendous growls, that made the rocks ring again: it still seemed unwilling to depart from a place, which offered so much security. We now resolved to try other measures to dislodge our enemy, and commenced by threshing at the aperture with a long stout pole; but this failed alike, with the other means we had employed to rouse it to action. Emboldened at last by its cowardice, we attempted to punch it; but this had no other effect than to produce the most appalling growls, and spitting like a cat. Lion, himself, seemed sensible of the creature's want of spirit; and was with difficulty restrained from dashing in to the combat, in which event, his life would have paid the forfeit, without rendering us any assistance. Being convinced that nothing would induce the Panther to leave its strong hold, I formed the resolution of shooting it, if possible, in its very den. I requested my friend to stand in readiness to shoot, or let the dog in, in case I failed, or the Panther should spring at me. This arrangement made, I succeeded in getting a small distance into the cave, and after remaining some time, could see perfectly well. I found, however, that there was no chance to shoot it, even when so near; as, instead of getting to the extreme end of the den, the Panther had concealed itself behind a rock, which jutted so much above the bottom of the cave, as to shield it completely from my view. The animal's cowardice increased my courage so much, that I determined on using every means to destroy it. I requested my companion to procure me a long pole to punch it with. My plan was to lay my rifle parallel with the pole, and the moment the Panther seized the end with his mouth, to fire; and thus hoped to shoot him directly in the head; and should I be unsuccessful, and the Panther make a rush, I was to fall flat on my front, provided I could not get out in time, and let it run over me to escape. My friend, who was a bold man, and a first rate shot, was to kill it as soon as it appeared; or, if the Panther stopped to give me battle, was to let the dog enter and seize it; and thus give me a chance to retire. I knew this was the only mode; for were I to present any obstacle to the animal's progress, as that it could not conveniently pass, my life would pay the forfeit in so doing: but I had good reason to doubt its courage, and, therefore, felt no great alarm for my safety.

My friend having procured the pole, I put my plan into operation: the first push I made roused the anger and ferocity of my enemy, and convinced me that nothing but cowardice on its part saved me from utter destruction. The cave echoed and trembled with his growling. The Panther seized the end of the pole with so much fury as to bend it over the rock, and still kept its head from my view. So long as I tried to pull the stick, the animal kept a firm hold; but the moment I ceased pulling, it also relaxed its hold. The actions of this creature were so quick, that it was impossible to direct aim at it with any degree of certainty; and on raising its head to seize the pole, the flashes from its eyes were distinct, but so quick were they out of sight, that it resembled, more than any thing else, sparks struck from a flint. So strong was this animal, that with both my hands, and utmost strength, I could not pull its head one inch.

After labouring for some time in this way, I requested my companion to procure me a pole much stouter than the first, so that, when the animal seized it, he could not press it behind the rock; and must of necessity keep its head in view. The pole, though not answering my expectations exactly, enabled me, nevertheless, to discharge my piece at the monster. I was exceedingly desirious of making a fatal shot, and as an hour had elapsed since I entered the den, I determined, at all hazards, to fire. Possibly I might hit—eight chances out of ten were in my favour of doing so—or that in case I missed, I could, with one spring, clear the mouth of the cave. Under these impressions, I thrust the pole once more at the Panther, and the moment it was seized, levelled my rifle and fired; at the next instant I made a spring at the opening; my feet slipped on the ice, and I slid backwards into the cave again. My friend, who was on the alert, seeing me fall, and apprehensive lest the Panther had seized me, let Lion loose: he sprang over me in an instant, and made an attack upon the common enemy, whose fury was now aroused to the highest pitch by the ineffectual shot: the odds were fearfully great, as a single blow of the monster's paw was sufficient to hurl the poor dog with violence against the rocks, and fortunately, beyond the reach of another, or his career would have ended on the spot. It may be supposed that I quit the cave with all convenient despatch; for had I remained, my condition might have been even worse than poor Lion's, whose shoulder and side exhibited three frightful scratches, of some fourteen inches long, which left four of his ribs entirely bare. Our efforts to dislodge the Panther, proved, thus far, unavailing; and having spent much time and labour, and the day being excessively cold, we thought of blocking him up until we could procure assistance, and the means necessary to accomplish his destruction, for we felt unwilling, after all our toil, to suffer him to escape. I recollected at this instant, that whilst in the cave, I thought I saw a ray of light or small aperture at the extreme end, when the Panther altered its position. I mentioned this circumstance to my companion, who proposed an examination of the back part, or outer side of the cavern, and I was to remain at the mouth, whilst he proceeded to examine. This cavern (as we have stated) was at the termination of the ledge of rocks, and jutted out considerably from the mountain, against which a great number of hemlock trees had fallen, and these being covered with snow at the time, prevented our seeing the exact conformation of the ledge, until I mentioned the circumstance of my seeing the light. My friend proceeded there instantly, and soon returned with the information, that there was a small aperture in the rock about six inches wide and a foot long; that the Panther had completely jammed up the hole with his rump; whilst his tail projected outside nearly its whole length. Here was a discovery. I shall never forget the expression of my friend's countenance, when he exclaimed, with great emphasis, "my gracious! I can take him by the tail! and I have a great mind to do so. I can then say, that I caught a full grown, live Panther by the tail." He might, indeed, have done so with impunity; but whether the measure would have been politic, was another consideration—one thing however, was certain, that was, his destruction, for which we had been toiling in the midst of peril—it was now an easy task; the bullet might be driven through his very vitals, without incurring any personal risk. Would it, I thought, be an act of cruelty to destroy this cruelest of animals in his fancied security? or would it not rather be considered a service rendered to the community at large? This animal might, if suffered to escape, prowl around the settler's habitation, and carry off, in its unguarded moment, the helpless infant; for when hunger presses, it becomes bold and daring, and nothing in the shape of food comes amiss. I accordingly placed my rifle near his rump, and fired, the ball coming out near his throat. It made one spring, and roared tremendously; bit the rocks, and with its claws attempted to enlarge the aperture, and get at us; but the wound was mortal, and it fell dead in the cave. We then entered, and fastening a withe around its neck, dragged it out: it proved to be a male of the largest size. We took it with us to our village (Deposit) from whence it was taken to Delphi, in the same county; and although Panthers were numerous there; yet the circumstance of his having been "caught by the tail," excited the astonishment of all who witnessed the magnitude of the monster.

T. M. H.

ANECDOTE OF A CROW.

The following circumstance was lately told me by an old gentleman, a member of the Society of Friends, and one in whose veracity I place the utmost reliance: About ten years ago as he was riding in his carriage from this city to his residence near Darby, passing a spot of marshy ground, he observed a Crow hover over it, presently dart down, and immediately ascend, bearing in its claws a Woodcock, held oddly enough by one wing, and struggling violently. As the direction in which the crow passed was directly across the road along which the gentleman was travelling, he formed the design of compelling his rapacious Crowship to release the captive. With his whip he struck several blows sharply upon the top of the carriage, and at the same time, raising a shout, the Crow dropped his burden, and flew screaming to the woods, and the Woodcock to his marsh, without having received any apparent injury.

Believing the foregoing to be an unusual occurrence, I submit it for the speculation of the curious.

A. B.

May, 1831.

CANINE ESTABLISHMENTS.

The two largest establishments of this kind, not sporting ones, are in the hands of two persons, who might be the least expected to have them. The first is her Royal Highness the Duchess of York, who has a most numerous nursery of Dogs of the smaller species, of every age, and nearly of every country. Not having the happiness to enjoy any other nursery, they occupy many of her best apartments, and are carefully accommodated with cushions to rest their wearied limbs, when they incline to repose; and it requires some dexterity, on entering her Highness's apartments, to steer your way so scientifically, as not to tread on any of these sleeping beauties.

Though some cynical philosophers might call this pursuit a mode of getting through life dog-cheap, yet it affords some useful purposes. In the first place, it is at least, an innocent mode of passing time; and secondly, it has afforded many opportunities for the painter, of exercising his talent, and having his skill rewarded by the munificence of her Royal Highness, who has almost found constant employment for the genius of an Animal painter, Mr. Chalon, in painting these favourites.

We are not sure, we might not add another artist to the account, we mean the Undertaker, as we understand, many of the more favoured animals have been buried in the park at Oatlands, with all due ceremony and decorum, realizing the Elysium of Virgil—

> —— eadem sequitur tellure repostos
> Cura canum.

The next Lady, who exhibits this remarkable attachment to the canine race, is the beautiful and amiable Viscountess Castlereagh, who has the same excuse to plead, as her Royal Highness of York—not having a nursery of her own, to engage her attention, or employ her time. Her Academy of Dogs, if we may be allowed the expression, is on a far different scale from those of the Duchess of York, hers being as diminutive as those of Lady Castlereagh are grand and magnificent. Whether the diplomatic interests of her Lord, may have favoured her wishes, is uncertain; but she possesses dogs of different countries, wherever size and beauty are to be found. Whoever may have the good fortune to meet this accomplished lady, in her walks around her seat at North Carey, in Kent, will always find her surrounded and defended by a most powerful and magnificent party of dogs, looking "most terrible things," but seeming most perfectly obedient to her voice. Amongst her collection, we believe, she has Russian, Turkish, and Spanish dogs.

The following whimsical anecdote is mentioned, as having occurred to her Ladyship, as she was taking one of her accustomed walks, with her canine guard: a man who was walking on the road came up, and taking off his hat, said—"I suppose as how, Ma'am, you be a dog-fancier, or mayhap you exhibit with these here animals at different pleaces, as may be agreeable; if so be, as it may be suitable, I should be glad to join company, having a few dancing dogs of my own."

Her Ladyship laughed, but with her accustomed grace and good-humour, informed the man—"She was not in that line of business."

Scott.

WHITE FISH OF THE LAKES.

The White Fish is taken by both whites and Indians with a scoop net, which is fastened to a pole about ten feet long. It is hardly possible for me to describe the skill with which the Indians take these fish. But I will try. Two of them go out in a bark canoe, that you could take in your hand like a basket, and in the midst of the rapids, or rather just below where they pitch and foam most. One sits near the stern, and paddles; the other stands in the bow, and with the dexterity of a wire-dancer, balances "this egg-shell," that you or I would be certain to turn over in our attempts to keep steady. When a fish is seen through the water, which is clear as crystal, the place is indicated by the man with the net, when, by a dexterous and quick motion of the paddle, by the Indian holding it, he shoots the canoe to the spot, or within reach of it, when the net is thrown over the fish, and it is scooped up, and thrown into the canoe—meanwhile the eye of the person in the stern is kept steadily fixed upon the breakers, and the eddy, and whirl, and fury, of the current; and the little frail bark is made to dance among them, lightsome as a cork; or is shot away into a smoother place, or kept stationary by the motion of that single paddle, as circumstances may require it. It is not possible to look at these fishermen Indians, and Canada French, and even boys and girls, flying about over these rapids, and reaching out this pole with a net to it, without a sensation of terror. Yet it has scarcely ever happened that any of them are lost; and I believe never, unless when they have been drunk.

This fish being, in the universal estimation, the finest that swims, and resembles our shad, except its head, which is smaller and more pointed. Their weight varies from four to ten, and sometimes fourteen pounds. The meat is as white as the breast of a partridge; and the bones are less numerous and larger than in our shad. I never tasted any thing of the fish kind, not even excepting my Oneida trout, to equal it. It is said they do not retain this character after being salted; in this respect our shad and salmon have the preference.

REPLY TO SPORTSMAN'S REJOINDER.

MESSRS. EDITORS:—Your Correspondent, the "*Sportsman,*" certainly deserves much credit for his ingenuity in discovering the assailable points in my argument, and I acknowledge there may be much truth in some parts of his reply—but I regret he has not comprehended my diagram, and on this miscomprehension, has founded a system of reasoning and proof entirely irrelevant to the case. In my explanation of the problem, I supposed that one second of time *might* elapse from the *commencement* of pulling the trigger to the arrival of the load, which we will presume, to simplify the case, to be a ball, at the muzzle. This, I imagine, would not be much out of the way, for a sensible interval of time does ensue, after the finger *begins* to press the trigger, before the load issues from the barrel. When it has arrived at the very muzzle, and that muzzle *still bearing* full on the object, is the instant that my principle commences, the preceding being a mere introduction to the case. Let us imagine the gun and the object to be stationary, the ball will of course pass straight from one to the other. Let us suppose the bird alone to be in motion, at 87 feet in the second, the ball will necessarily, if it take a second to fly from the gun to where the bird was at the moment of discharge, be 87 feet behind the bird. The ball has in this case but one motion, and that a forward one. We will now in addition give it a latteral force. The gun, of course, is useless to the load after it has issued, and its movement may therefore cease. The ball depends for its forward projection, on the powder, and for its lateral power, on the motion of the gun, and on no other possible cause. Suppose the ball be thrown from a mere hollow and no barrel to exist, it would necessarily go *straight* forward from its chamber to the point toward which it was directed. If we give it a tube to pass thro', up to the very object itself, it will reach the object it is true, but every inch it travels the route, it is receiving from this passage a *lateral* force which increases from the chamber, which we will take for the centre of motion, to the end, being from a unit, to 87 feet in the second. During the passage of the ball through a tube thus in motion, it will, whilst in the canal, perform a portion of an *elipse*—somewhat on the same principle that a body projected into the air will do it, to return to the same point from whence it started—being caused in one case, by the lateral pressure of the tube, and in the other, the attraction of gravitation, being in the latter instance a variable power, acting every instant in a different line according to the point over which the object is passing. In the case in dispute, the ball, so soon as it issues from the barrel, will pass in a right line, because gravitation is not considered, and the projectile has received all the forces that *can* influence it. The 'Sportsman' does not object to the swing of the muzzle of an ordinary gun being 10 feet in the second; or he may take any distance he may choose, for, a principle that is "*philosophically* correct," cannot be invalidated by a change of proportion alone. When the ball has therefore arrived at the end of the barrel, it will have passed thro' a given distance from the centre of motion, and acquired the sole lateral power of the part to which it may be at the instant attached, and if it remain attached, and the muzzle perform a circle, would arrive at the same point again, in a time exactly according to the rate of motion of the part to which it was fixed. We will however let it loose during some part of the revolution, and how fast will it go, allowing it has received no impulse other than the circulatory motion of the part. Certainly not more rapidly than the *source* of its motion, the muzzle, exactly as in "Sportsman's" case of a man on a fleet horse, the object thrown, possessing precisely the same forward momentum, and returning by the power of gravitation to his hand,—or in the sailing ship, the object retaining a certain force parallel to the surface of the earth, besides the downward gravitation, and arriving at the *foot* of the mast, simply, because the foot of the mast is travelling at the *same* identical rate that the head is, and the falling body possessing precisely the same momentum.—Please tell me, Messrs. Editors, where the parallelism can be, between these instances of "Sportsman" and the shooting, for he certainly proves by them, that a projected body receives the lateral momentum of the part from whence it issues, and no more. In his illustrations, he forgets that every point and body considered, are moving at the same rate—whereas, in the shooting problem, the breech of the gun may be supposed a *fixed centre* of motion, around which the other bodies are revolving, and each possessing a different rapidity in proportion to its distance from the centre. Let me take another instance of the "Sportsman," for I certainly desire to afford him every advantage in my power. We will allow, the surface of the earth moves at the rate of 950 feet from west to east in a second of time, and will imagine a tower sufficiently elevated above its surface, the *top* of which, must describe a a circle as much *greater* than the surface of the earth as will require in the revolution round the axis, a circulatory momentum of 1000 feet in the second to preserve its relative situation. Suppose a *body* to be projected from the earth at the foot, exactly towards the *top* of the tower. At starting, it possesses a lateral force of 950 feet in the second, and during a second, has arrived at the same height as this supposed point. Now where will it be? The answer is self-evident, it will be 50 feet behind the object towards which it was directly pointed at the moment of its departure. It still retains its side force of 950 feet in a second, and on returning to the earth at the expiration of the second second, will reach the point from whence it started, although that

point will be now 1900 feet to the east. But in its flight, it will have made a *mathematical* angle, from a direct line drawn from the point of emission to the centre of the earth, the maximum of its altitude being 50 feet west of a perpendicular, but as in measurable distances this would be inappreciable, it need not be considered. Let us reverse the case, and suppose a body let fall from this point in the air which is passing forward at 1000 feet, and it reaches the earth which is travelling at 950 feet in the second. Now where will the body touch on the surface? Just 50 feet in advance of the foot of the tower.

All this proves, that if the muzzle of the gun be passing laterally at the rate of 10 feet in the second, the ball can possibly receive but the same momentum, and whether the load be one second or the 20th part, in passing to the object, the proportion will be the same.

In addition to all this, the duck-shooters who live at Egg-harbour and on the Chesapeake, have always advised to give a certain allowance. I have conversed with scores of them, and have never heard a variance of sentiment, and in objecting to a short gun, the reason they have urged was, that they had to give their aim so much advance. At sixty yards, heavy shot will scatter several feet when fired from the best gun, and therefore, many birds are struck, when the mass of the load may have passed far behind the duck.

In common game, it would be absurd to make any allowance, from the slowness of flight, and general nearness of object, and where the number of pellets is so great, the space covered, will be more than sufficient. It is with a ball alone, the matter can be determined.

With respect to the rest of "Sportsman Rejoinder," his explanation and reasoning are certainly convincing, and it gives me much pleasure to acknowledge the correctness of his philosophy. That a peculiar sound can be heard when ducks are struck, there is no doubt, though it is more than probable, the non-entering pellets produce it; although, as I before remarked, a ball that passes through a deer can be heard distinctly to strike. My object was merely to prove, that sufficient time did elapse, for the sound to be heard distinctly by the shooter, and that rarely a duck was killed, without *some* of the shot being heard impinging, and old duck shooters have informed me they could say without hesitation, from the sound alone, what part of the bird received the load. I. T. S.

Extract of a Letter from a Gentleman in the Country to his Friend in Philadelphia.

"THERE is now in the grove near the house, a cock pheasant which drums every day. Yesterday morning as I came out of the east door, which leads from the house to the office, a favourite peacock was standing close to it, and I heard behind a lilac bush, two or three yards from the door, the pheasant's peculiar clucking noise: as I wished not to disturb him, I walked on towards the office; but had scarcely passed the bush ere he went off with a whirr, almost touching Jack, the peacock, who seemed to mistake the noise for that of some missile aimed at him. He took to his wings, his long tail, which spreads ten feet, dangling after him, and scolding all the way, flew to one of the tall trees on the lake shore, where he spent an hour on the highest branch, apparently in deep reflection as to the cause of his alarm. I saw him afterwards with his long neck stretched out, treading most gently on tiptoe, and examining with his keen eyes behind the lilac bush. It is not a trifle that will frighten Jack. He is very familiar, and comes at a call to take any thing from your hand. He possesses great courage, and has several battles daily with two superb wild turkey cocks of great size and most brilliant plumage, which we have domesticated. Last year, when they were in their second season, he beat them both, but this year they overpower him with their great weight; and besides, they are now joined by a son, a half-blood, which renders the battle very unequal. But Jack's rule is, never to decline a combat offered by them, and the servants have very frequently to use switches to separate the belligerents. Whilst I write, I hear Jack's shout of defiance on the south side of the office, answered by the war cry gobble of the turkies on the north, and I shall have to ring the bell for some mediator to interpose between them." *May*, 1831.

Notes of a Naturalist. By JACOB GREEN, M. D.

SAGACITY OF A DOG.

'TIS thought by some, that all animals are surrounded by an odoriferous atmosphere, and that each species, and even each individual, emits a volatile principle peculiar to itself. I knew a person whose sense of smell was so exceedingly delicate as to enable him to distinguish his friends by this odorous principle alone. From some recent experiments of a French chemist, this odour is found in the blood, and may be readily produced from it by the addition of a little strong sulphuric acid. Every one familiar with rural employments knows, that after sheep have been washed or shorn, there is great confusion among the flock; the lambs and ewes run bleating about, and it is some time before the mother and the offspring recognize each other. This embarrassment, is, no doubt, occasioned by the loss or the diminution, in intensity, of the volatile odoriferous principle peculiar to each. It has been long ago remarked, that the brute creation recognize each other more from the smell than the sight. The following anecdote may serve still

farther to illustrate this curious subject. It was recorded in my diary some years ago.

At my boarding house in Albany, there is an old family dog, called Cesar. This animal seems to have a special and violent antipathy to all swine: the moment a hog makes his appearance in the street, or in the extensive yard attached to the house, Cesar will dash upon it, and worry it in the most violent manner. Among the servants in our establishment, we have a little French barber named Ferdinand: now Ferdinand and Cesar are almost inseparable friends; Cesar espouses the cause of his master, right or wrong, on all occasions; and Ferdinand protects his canine friend, with the enthusiasm of his countrymen, from all the assaults of cook, scullion, or lackey. In process of time, Ferdinand, by the consent of our host, established a piggery in the yard, and who, but Cesar, has undertaken to watch over his little herd, which are permitted occasionally to roam about in the streets of the city. Ferdinand's hogs are all entirely white, and often after their excursions abroad, they are accompanied home by a host of acquaintances of the like colour; but Cesar never suffered one of the strangers to remain on our premises. He knows his master's property much better than he does himself; and should he not be present when they are fed, he is always called to ascertain if any strangers are present, and it is surprising with what quickness and certainty he discovers, and unceremoniously ejects them.

It is well known that our Indians keep their various troops of horses, which are pastured in the wilds of Florida, separate from each other, by means of dogs trained up for the purpose. These dogs differ, however, from Cesar, inasmuch as he is self taught, and this when eight or nine years of age. Bartram in his Travels relates the story of an Indian dog who kept his master's horses together on a wide plain, about ten miles distant from his wigwam. The dog when hungry came home for his food, but never remained there during the night.—See *Bartram's Travels*, pp. 222-3.

While noticing the sagacity of the dog, I will state two other facts, which, though they have been frequently witnessed by sportsmen, are perhaps worth recording.

On a shooting party the other day in company with some friends, we killed a rabbit, and our pointer slut, Venus, while fetching the rabbit in her mouth, came to a dead point at a pheasant about twenty yards distant.

My friend, J. B., informs me, that when hunting with three dogs, it frequently happened, that when one of his dogs pointed a bird, the second dog would point the first, though out of scent of the bird, and the third dog, perhaps not seeing the first, would set at the second; thus forming a kind of telegraph of two or three hundred yards, to the sportsman. J. G.

INSTINCT OF THE SPIDER.

The wonderful ingenuity frequently exercised by most animals, in securing the means of sustenance, must be familiar to every observer of nature. In no class of animals are the instincts resorted to for the purpose of obtaining food, more surprising than in that which is considered the lowest in the scale of animal life. For this end we often find many insects endowed with a kind of foresight, and apparently exercising a degree of philosophic induction, and a knowledge of the laws of mechanics, which are not surpassed by all the boasted powers of man. The little pit falls constructed by the Lion-ant, and the ingenious means used by many of our common insects to entrap their prey, must be familiar to most of your readers. The following instance of ingenuity and mechanical skill used by a small House-spider in lifting the carcase of a large fly a foot or two from the floor, may be depended upon.

Some days since a little Spider was observed under an arm chair, running to and fro, and exhibiting marks of great bustle and anxiety. Upon watching its proceedings its nest was soon found under the bottom of the chair, and the dead body of a fly, much larger and heavier than itself, was seen lying on the carpet below. It was evidently the intention of the Spider to raise up this heavy load and to deposit it safely in its storehouse for future use; but how, with its strength, could this be effected? He commenced his tedious and singularly scientific operation by attaching a line, or strong fibre of his web, to one of the legs of the chair about four inches from the floor, and then fastening the fibres to the body of the fly, he extended the line to the opposite leg of the chair, and there fastened it about the same height from the floor as in the first instance. As the fly lying on the carpet was much nearer the one of the legs of the chair than the other, the two lines which formed an angle with the body, were of different lengths. As the Spider now slowly moved along the longest end of the line, the weight of the fly was thus overcome by a mechanical advantage, and raised a little distance from the floor. Every one knows that the *lever* is the most simple of all the mechanical powers, and one to which all the others may be referred. In the contrivance of the Spider it will be noticed that that form of the lever which is used where the *fulcrum* is at one end, the *power* at the other, and the *weight* between them, the Spider, having ascertained that portion of his lever which, when depressed, would lift his prey to the greatest altitude, fastened it in that position, by a clue, which reached from that part to the floor. By repeating this same operation several times, the fly was at last safely deposited in his nest above. I must not forget, however, to mention that when each new lever was constructed, the weight was carefully detached from all the fastenings below.

J. G.

COMMUNICATION FROM SUSQUEHANNA COUNTY.

WITH A DRAWING OF TROUT.

DEAR E.,

I RECEIVED a few days ago, from Messrs. Doughty, the four numbers which they have published of their "Cabinet of Natural History and American Rural Sports," accompanied by a letter, which is entitled to a very courteous answer. They suppose that I could render them some assistance in their work; but what time have I to write, except, *currente calamo*, in the way I usually talk to you, pen in hand? I am not acquainted, personally, with either of those gentlemen; but I know perfectly well the style and manner of one of them, in his beautiful landscapes, and could point out one of his pieces among an hundred others. I wish the editors every success which they can desire; but how can I assist them in their present work? To be sure, I could tell some hunting stories for their book; but many around you could do the same, as all our countrymen are marksmen; yet, it is probable, that, of your citizen-shooters, the most expert at bagging woodcock and snipe, have never shot, as I have, an elk when at his full long trot, just as, from left to right, he crossed a small opening in the thicket, with a rifle ball, so exactly through the heart, as to bleed him to death before he could take twenty steps after the trigger was drawn; and then, with the assistance of a companion of the forest, stretched his skin on a pole, attached to two forked sticks, in time to form a shelter from a severe thunder storm, and couched myself, dry and comfortable, under it, while a deluge of rain fell unceasingly throughout the ensuing night. And, perhaps, you have no one near you, unless it may be Mr. T. R. Peale, who could say, as I could, that he eat a slice of a buffalo, admirably roasted, in fifteen minutes after the rifle was discharged which killed the animal. But Mr. P. must know how expeditiously hungry hunters can prepare a meal, without thinking of Macbeths advice,

> "If it were done, when 'tis done, then 'twere well
> It were done quickly,"

which, I believe, has been quoted in the *Cours Gastronomique*. How well Peale or Doughty could sketch the scene! One person is kindling a fire of dry sticks and leaves; another, having cut the skin just over the hump, is slicing with his scalping knife, that delicate morsel so well known to all hunters in the "far west;" while a third is employed in fixing the pieces on slender rods, like skewers, and sticking one end into the ground, the other being sloped at a proper angle to the clear blaze, and almost touching the flame. I should like to know which of your *restaurateurs* could furnish a dish equal to that repast—the side of the

piece sliced away, when roasted to the depth of half an inch, and while that was, as novel writers say, "discussed," a new surface was presented to the fire—the noble animal that furnished the meal, lying invitingly by the side of the party, his dark head with its curled hair and short horns, presenting, like the black bull's head of Ravenswood, with his "I bide my time;" but serving as a better omen to the partakers of the feast. Some fastidious persons may turn from this as an Abyssinian repast: but there is no squeamishness of that kind to be found in the prairies. Ask Mr. T. R. P. whose looks bespeak him a very gentlemanly as well as amiable man, what he thinks of the relish of the buffalo hump, eaten in that way, in the western prairies. I assure you, that it would not require the appetite of Gudgel, the fat caterer for the Abbey, in the Hunt of Gildon. The boar Crowdie would have been nothing to the bos ferus—the *bos ferus!* why, that is the phrase of Cooper's Dr. Battius in his prairie! What an abominable caricature he has made of that Dr. Bat! a "Vespertilio horribilis," indeed! I am mortified and vexed at Cooper for losing so fine an opportunity of displaying a naturalist in all his glory. How a botanist might have raved! How a geologist might have ranted!—and yet, all been true to nature. Most absurd Dr. Bat! Cooper would never have suffered you on shipboard; or if by any means you had got there, long Tom Coffin would have thrown you overboard with as little compunction as he would feel at harpooning a whale.

Do you know * * * *? Perhaps not; for he endeavours to keep out of sight. He likes to see every thing; but to avoid being seen himself. Almost infantine in his simplicity—*simplex munditiis* emphatically. Impassioned only in his particular pursuit. If he met Venus, attired by the Graces, walking in Chesnut street, he would take no notice of her; or if, by any possible chance, he did observe her, he would think her but so-so; yet in the seclusion of his study—(I am almost tempted to describe his study to you)—he can write in the fervid style of a lover, about "a most exquisite collection of reptiles!" Ah! I wish * * * * had sat for his picture! Instead of the rude bistre daub of Dr. Bat, what beautiful drawing might have been expected! What strong lights and shadows, with here and there a demi-tint, or neutral colour, slightly appearing through them, would have been thrown on the canvass by the painter—in general, a master of his art. I wish you knew * * * *. His plain face, and his plain garb, would not attract your eyes. You might be in his company for a month and take no notice of him; and he would take none of you, if he thought you were of the common herd—that is, engaged only in the common business, or common amusements of life—the *ignobile vulgus*, as he considers them, great as well as small; for the wealth of "Rothschild's or the Barings" is nothing in his view, except as it might be

made subservient to the collection of a cabinet of zoology, ichthyology, geology, mineralogy, &c. &c. Solomon himself did not behold the pleasures that distract mankind with more contempt, when in his silly and well known fit of disgust, he said, that "all was vanity." But draw out * * * *. Ask him why acotyledonous stiped and culmiferous plants, bivalve mollusci and chambered univalves were created before the depositions of the last of the argillite; or why the acotyledonous and monocotyledonous plants before the animals, and you shall hear him talk—"Good gods! how he will talk!" as the mad poet makes one of his heroines say of Alexander the Great. The enthusiasm of a geological friend of mine, with whom I have the honour sometimes to correspond, and who in his last published work says, that "the brilliant constellation of resplendent luminaries," (alluding to certain persons whom he names, who have written about stones and earth,) "who began at this epoch to enlighten both *subterranean* hemispheres," is nothing to * * * * when thoroughly excited by his favourite subject. I believe the greatest regret that * * * * ever experienced was, that he could not have lived during that remote state of our globe, when animals of the Saurian family, seventy feet long, (their necks thirty feet,) swam and sported in the vast profound. He really sighs for the days long past of the megalosaurus and the plesiosaurus! "What," said he to me one day, his eyes flashing at the thought, "what a glorious time they must have had! Ah, there can be nothing like it now!" And yet * * * * must think that the world is rapidly growing better; for he says that the inferior animals are all dying off as fast as they can; and that the plastic hand of nature is occupied in preparing the *materiel* for the formation of superior ones to occupy their places; and he is as confident as of any thing at present before his eyes, that the time will soon come, (by soon, I believe he means only ten or twenty thousand years,) when every thing inferior to man will have perished, and myriads of genera, infinitely his superior, will have been created. For my own part, I am far from being satisfied that this will be a pleasant state for poor man to be in; for I remember when I was a school-boy, I always objected to change from the head of one class, and take my seat at the tail of the one next above it. I would have made no objection to jump to the middle of the form; but never liked the equivocal honour of the single step. Burns appears to have been of the same opinion of * * * *, and, like our naturalist, thought that nature, having tried "her prentice hand," went on improving her skill by practice.

I wish I were enthusiastic; for I like enthusiastic people. The sensation must at all times be delightful. How differently do different eyes behold the same object! An English traveller, in his journal, while descending the Mississippi, says that the alligators looked like black logs on the water, drifting with the current; and that one day, he took a canoe, and went off to kill one, fired at it, and when he picked it up, found it to be a large bull-frog, weighing nearly four pounds. What a bathos this is! I will say nothing about Audebon's alligators—since his story of the rattlesnake, I keep clear of Audebon; but how does one of our own honest chroniclers and lovers of nature describe the alligator? "Behold him rushing from the flags and reeds. His enormous body swells. His plaited tail, brandished on high, floats upon the lake. The waters, like a cataract, descend from his opening jaws. Clouds of smoke issue from his dilated nostrils. The earth trembles with his thunder." This is something quite Ossianic; although I must confess that I do not see how his tail could float on the lake, while he was brandishing it on high.

One man shall tell you, in homely phrase, that the Indian on horseback was very near getting a shot at a deer; but that the deer ran off. Another person, properly imbued with the sublime and beautiful, in narrating the same thing, says, "The red warrior, whose plumed head flashes lightning, whoops in vain. His proud, ambitious horse strains and pants; the earth glides from under his feet; his flowing mane dances in the wind as he comes up, full of vain hopes: but the bounding buck views his rapid approach, lifts aloft his antlered head, erects his white flag, and his shrill whistle says to his fleet and free associates, 'Follow!' In a few minutes he distances his foe, turns about and laughing says, 'How vain! Go chase meteors in the azure plains above, or hunt butterflies in the fields about your towns.'" I will make no comparison between this horse and that of the poet, whose speed *devoured* the ground; nor between this laughing buck and the war-horse which cried, ha! ha!—nor will I stop to notice the tautology of his lifting aloft his head, nor "the azure *plains* above," which existed in his philosophy; but I will say to my acquaintance Cooper, as the above-mentioned buck, or any other sensible animal might say, even without the buck's peculiar and emphatic whistle, Do, for Heaven's sake, my good fellow, banish the miserable Dr. Bat from the prairie, and send him to hunt butterflies about your towns.

But how I have wandered! I began this with the intention of sending you for "The Cabinet," a drawing by a young lady of your acquaintance, of the particular kind of Trout found in Silver Lake, and, so far as I know, to be found in Pennsylvania only in this and another lake, about three miles from it. I believe this species has not been described in any work on Ichthyology. It is not among the sixty-two varieties of Salmo, described by Shaw. Le Sieur knew it not. But as I think that the conductors of "The Cabinet of Rural Sports" do not desire to load their work with names in "heathen Greek," nor care about the differ-

ence between a malacoterygian and an acanthopterian; nor between the chondropterygian and the branchrostegous, I shall say nothing on that subject. The drawing will describe the species very exactly. You know its *habitat*, and can say that this fine variety of the finest genus of fishes, lives in a lake of pure water, where it may, at its discretion, vary the temperature from that which is found near the surface, affected by the sun's rays, to that at an hundred feet depth, where, throughout the year, Fahrenheit's thermometer remains at 46°

Do you remember our letting a black bottle down with a line to the greatest depth of the lake, in order to ascertain the temperature there, and after bringing it up full—the pressure of the water having forced in the cork, which we had left in the bottle as we found it—our discussion as to what could have given the water at the bottom its singular taste and deep colour; and conjecturing that at the depth to which the bottle had been sunk, there must be some peculiar kind of aquatic plant—unknown, undisturbed, a treasure for the botanist, if it could be got at—which had given to the contents of the bottle its strange taste and hue?—and on our taking the bottle to the house, to get others to form their conjectures on a subject so important to science, our being asked where we had got the bottle, and whether before letting it down, we had poured out the wine that was in it? But to return to our Trout: Ask Dr. D. what he would give to hook and land safely, a trout twenty-four and a half inches long and six pounds weight. This beats yours; the largest you caught weighed only four pounds and three quarters, and measured twenty-three inches. Don't dispute this; for the weight and measure were all correctly "booked down."

You know that in the outlet, or stream from the lake, none of the lake trout were ever found; and that in the lake we have never seen but one of the creek trout, and that was an uncommonly large one. In other lakes, and there are many small ones in this county, where there are none of the lake trout, the red-spotted trout of the streams, or salmo fontinalis, is the common and only one. That the two may be compared, they are both shown on the paper which is enclosed. The lake trout is longer, more slender, and has a forked tail. You know that this trout will not rise at a fly, like the common trout of the streams; and that it is caught only with small fish as bait. The two kinds differ much in size; the lake trout is seldom caught so small as one pound weight, the creek trout seldom so large. I have been frequently puzzled to imagine where the small lake trout keep themselves. One of your citizens, whose ideas of rivers were probably formed from the Delaware at Philadelphia, when he saw the Susquehanna at Wilkesbarre, expressed his surprise that a river could be *so little*. From the description given to me of the trout in the lakes north of this, in the states of New York, Vermont, &c., I think they are of the same species as those in Silver Lake; but I believe the latter to be their southern limit.

I have not observed the colours of the lake trout to vary at different times of the year; but the colours of the male of the red-spotted trout change very much, and are deeper and much more brilliant at one season than at another; like the males of most kinds of birds, whose feathers become gayer at the time of courtship; so that the honeymoon garb of some of them, makes them look like different birds from what they are the rest of the year. So it is with the creek trout, of which the drawing represents one in his September dress, his back of a rich olive, lighter on the sides, sprinkled with brilliant spots of vermilion, and his fins tinted with vermilion, a rich black, and a pure white. You have seen a dying dolphin—not the dolphin of the ichthyologists—the porpus or *delphinus tergo recurvo*, which the ancient writers say was so fond of music, and (fide majus!) carried Arion when he was cast, like a bait, upon the waters; but the dolphin of the sailors, the *coryphœna hippuris*—and therefore you know how suddenly and how surprisingly the colours of a fish may be changed.

Old Walton says, that "in England trout spawn about October or November; but in some rivers a little sooner or later." Their spawning time here is much the same. How I admired old Walton when I was a boy! I believe I have read every thing which has been published on the "disportes in fishynge," from his celebrated work down to the "New, Plain, and Complete Treatise on the Art of Angling, by T. F. Salter, Esq.," adorned with a plate of the author, but terribly out of costume for a fisherman—published in 1825, which you sent me about two years ago. I have even read the Nautical Idylls of Hugo Grotius, and the Piscatory Eclogues of Sannazarius, in hopes of gleaning something from them, which might be useful to the "brothers of the angle:" but the latter was much like a celebrated breeder of cattle sending for Miss Edgeworth's Treatise on Irish Bulls.

I think I was about twelve years of age, when I first read old Isaac's treatise, "being," as he says in his title page, "a Discourse of Fish and Fishing, not unworthy the perusal of most Anglers;" and I have never forgot some stanzas of his Angler's song, particularly the one:

> "When I the thoughtlesss trout espy,
> Devour my worm, or simple fly,
> How poor, how small a thing I find
> Can captivate a greedy mind!
> But when none bite, the wise I praise
> Whom hope of profit ne'er betrays."

That is, I admired the poetic fisherman; but fear I never learnt any thing from the fishing moralist; and when the

trout did not bite, I, as a boy might be supposed to do, attributed the failure, not to the philosophy of the fish, but to their want of appetite.

I love fly-fishing; because it is fishing divested of much of its barbarity. I mean, of course, the *artificial* fly. It is all very fair to catch a voracious fish, while he is endeavouring to gobble up what he supposes a nice little fly. I always disliked to use live bait, and never did when I could avoid it. Walton had many kind feelings, and in instructing you how to impale a frog in such a manner as to keep the poor devil alive as long as possible, he pathetically urges it upon you to "*use him as though you loved him;*" for which affectionate admonition he has been sneered at most unmercifully by half a dozen people, who although they may be very accomplished writers, are no fishermen. But in my early fishing days, I learnt more humanity from Thomson than from any other person, and for a long time, whenever I thought of going a fishing, I had humming in my ears:

> "But let not on your hook the tortured worm,
> Convulsive, twist in agonizing folds;
> Which by rapacious hunger swallowed deep,
> Gives, as you tear it from the bleeding breast
> Of the weak, harmless, uncomplaining wretch,
> Harsh pain and horror to the tender hand."

These lines saved many a worm. It was Thomson, I think, who, some lady said, showed plainly in his works, that he was a great fisherman and a great swimmer; but who, notwithstanding the lady's sagacity, and I must say that she drew a very fair inference, judging from his works, never took a fishing rod in his hand, and never went into the water. Thomson's worm puts me in mind of a time when I was trying to entice into my pouch some Trout from the Choconut creek—You have been there with me—They were shy, and I thought I would try some other bait, and searching around I found a worm. My head had been running on mixed mathematics, and the doctrine of chances—a foolish thing to puzzle one's self with when fishing. As I sauntered along, I had been proving to myself that the probability of two subsequent events, both happening, is equal to the product of the probability of the happening of those events, considered separately. Q. E. D. And had demonstrated the thing in my head most scholastically, when I said to myself,—Here is this poor worm. What *was* the chance that in the immense extent of this globe, it should be here, in *this* spot; and in the great lapse of time since the formation of worms, that *this* very one should have existed at all; and if existing, been here, at *this point of time;* and that I—the individual *I*—should be here *now*, of all times; and be here *in this spot* in all space, for the purpose of catching *a Trout*. That being here, at this time, of all times past, present, and to come, *I* should have found *this* worm, of all the worms of the earth, and should put it on *this* hook, among the trillions of hooks, to catch a particular trout, in this particular creek, of all the creeks in the world. And yet that *chance* has become a *certainty!* Prove me that, Mr. De Moivre! Poh! poh! 'tis all a folly, and it shan't happen; and you shan't be put upon this hook, nor be eaten by that trout, poor little worm. There, go off with you—wriggle away as fast as you can, and thank the doctrine of chances for your escape; and I'll bother myself no more with them: I dare say it was they that made me lose that last trout.

What fishing may be compared with fly-fishing for trout, in a fine, clear, spring brook, overarched by spreading beeches, birches, and elms!—the day so warm as to give a pleasing consciousness of the protection derived from the majestic trees—the water so clear as to tempt you from the bank to walk into the stream, that runs dancing over stones and pebbles, or whirling around rocks, as if for the purpose of forming lurking places for the trout. You throw your fly, and they see it in its light descent, and dart at it; but one, more alert than his fellows, springs out of the water and seizes it, before it reaches the surface! I am sure, my dear E., that you will always recollect THAT FISHING when we caught thirty-six dozens, (or was it it thirty-five and a half? I always said that; but you contended that it was thirty-six,) and the boy who attended with the horse and panniers, could scarcely put them away, wrapped up in the fresh green leaves, as fast as we caught them. Do you recollect the pool, where I stood over my knees in the water, and from one place, caught my fishing-bag full three times over—the boy being called that often to empty it? When, as the fly was descending, we could see trout dashing from different parts of the clear water, to the point where it was expected to fall, and the surface would be thrown into ebullition by the struggle among them to see who should be the fortunate fellow to seize it? Do you recollect what a delicious lunch we made that day, about twelve o'clock, you may call it *a dejeuner a-la-fourchette*, if you please —having been walking in the stream, the forest all the way overhead, from sunrise—how we sat on the bank, sub tegmine fagi, with our feet in the water, and how often you exclaimed, "How delightful this is!" Do you remember how the pellucid stream put us in mind of Professor Carlyle's translation from the Arabic poet, in lines which might be supposed to describe the limpid rivulet before us:

> "So smooth the pebbles on its shore,
> That not a maid can thither stray,
> But counts her strings of jewels o'er,
> And *thinks the pearls have slipped away.*"

Do you recollect, as we lay thrown back upon the grass,

my story of my friend H. D. ? the best of all men, although not the best of fishermen, who was out with me on the same stream, and near the same place, one time when I caught twenty dozens, and he two fish less than one dozen; that wondering what had become of him, I sat down on the bank to wait for him, and at length saw him coming towards me, very slowly, walking in the middle of the stream, his spectacles—near-sighted—enabling him to choose the deepest parts of it, his line rolled round his rod, and his rod on his shoulder. He would have passed without seeing me, and when I said, "Why H., what are you about? Are you tired of fishing?" "Oh, no!" he replied, "not at all—I am delighted with it: but this is the best part of it. I don't care about the Trout: you can catch enough for both of us."

Do you remember another story I told you, of another person, who accompanied me to catch Trout? After missing him for a long time, I heard him call at the full extent of his lungs, "I have caught one! I have caught one!!"—and looking up the stream, I saw him holding his rod out in triumph, with something dangling at the end of his line. Observing my attention, he cried, "What shall I do with it? Shall I kill it before I take it off?" And when, in his exultation, he came down to me with it, holding his rod at arm's length before him, I found his captive to be a miserable *chub*, about as long as his finger! A Dr. Battius of a fish!—Plague on Dr. Bat! having spoken of him, I can't get rid of the vagabond. You know we never caught chub —never suffered them to bite.

Do you remember what a supper we made on Trout, that night, at our bivouac? What exquisite sauce our day's fishing had provided for us? How delightfully our cook dressed the fish? How many you eat?—we always chose the small ones, not more than six or seven inches long—How thirsty you were when you awoke, sometime after midnight, from your bed of fragrant boughs? How horror-struck, when, half-dead with thirst, you found that there was no water in the tent? How your impatience would not let you wait until our cook could be roused to bring water from the spring? How you went yourself, in the dark, over logs and through bushes, down to the stream? And how you kept me awake the rest of the night, with your groans of tribulation and repentance at having drank so much cold water? And do you also remember, that, afterwards, during your rambles in Europe, when visiting the classic ground of Petrarch, you wrote to me that much as the Trout of Vaucluse were famed, you could say—for you had just had one for your dinner—that they were not to be compared, by a thousand degrees, to the Trout of Silver Lake?

And there you are, in Philadelphia, you who can recollect all this, plodding away at your profession! Well, I won't check you. Go on, and prosper! Only consider it your duty, during the warm weather of every year, to come up to our hills, and taking a little "idle time not idly spent," lay in a stock of health by breathing our pure air, and bathing in our clear streams.

R. H. R.

AN INQUIRY RESPECTING THE TRUE NATURE OF INSTINCT.

(Concluded from page 101.)

If brutes then are incapable of viewing moral qualities objectively, and reflecting upon them as such, they must necessarily be destitute of that perception of moral differences, with which the power of exercising their moral sagacity must be connected; moral sagacity, therefore, cannot exist at all in them otherwise than apparently; and this conclusion is exactly what a candid estimation of brute powers seems to lead to; namely, that they are actuated by moral energies of which they are not conscious, and which therefore are not properly theirs; and that these energies operating upon their proper conscious perceptions—which may be termed natural perceptions, to distinguish them from those which are moral and intellectual,—furnish the motive principles which serve to induce them to apply their conscious powers in a certain manner;—thus producing what is apparently moral in them, without their being conscious that it is so, and which thus is really not so as to them. The seat of these moral energies within them, therefore, appears to be a secret region in their minds, above the seat of their natural perceptions; the latter serving as a plane, as it were, for the operation of such superior powers, which, under the Divine control, dispose them to the fulfilment of the ends they are designed for.

In this manner it is possible to account for those surprising appearances of moral excellence in the actions of animals, which we observe them to display, and which are so totally above their proper conscious powers:—a moral excellence, which, as we have seen, appears in many instances more perfect and undeviating than that of the generality of human agents, and which, therefore, cannot be the result of any conscious freedom in the creature, unless we suppose them, in particular instances, raised higher in moral perception and determination than even man himself. It is by confounding the limited freedom of brute action with the superior energies, which, unknown to them, actuate their conscious powers, that their nature has been so far mistaken, as to be considered the same in kind with, and only differing in degree from, that of man.

Herein then consists one proper limitation of the brute mind:—although apparently moral, it is in reality not so, but merely natural, and is operated upon by moral causes above

its own consciousness, and which lead it to the performance of actions which, in effect, are moral, as considered objectively by the human mind.

From a comparison of this view of the nature of the consciousness of animals with that of man, the latter agent alone appears capable of considering and appreciating the nature of his own actions, and those of the inferior creation; he alone is conscious of moral, intellectual, and scientific energies and perceptions; and being, in consequence of this moral and intellectual faculty, at liberty to estimate and direct all lower operations, is in moral and intellectual, as well as in natural freedom; whereas the brute is in the latter only. From the most dispassionate survey of brute nature, it does not appear that the creatures have any reflex perception respecting the qualities of their own discernment, or of the moral energies, or scientific powers, which they display: on the contrary, it appears sufficiently evident that with respect to any perception of their own qualities in the abstract, the wisest is no wiser than the dullest, and the dullest is equally wise with the wisest; the most moral as little so as the least, and *vice versa:* the Peacock has no more perception of the pride he is famed for, than the Horse or the Lion have of their generosity; than the Fox has of his cunning, or the Tiger of his cruelty.

From these considerations, there is in appearance the strongest probability that the moral world, good and evil, may be in action upon, although above the stream of, the natural world, or above the consciousness of lower existence; and that the former may thus operate upon the latter as a cause upon an effect. But be this as it may, it appears certain, that moral qualities being objective in the mind of man, he alone is possessed of moral consciousness and moral freedom of action; thus is an inhabitant of both the moral and the natural world; and that as moral qualities do not become objective in the minds of brutes, or as the moral actions which they perform are not reflected upon by them, as such, nor are, in any respect the effects of moral choice and discrimination on their parts, they are therefore not possessed of moral consciousness, nor of moral freedom of action; and thus are not inhabitants of the moral world,—although acted upon by it,—but of the natural world only.

Having thus concluded my preliminary remarks on the moral qualities exhibited by brutes, I proceed to consider those which are of an intellectual and scientific character,—to the illustration, consequently, of the second proposition given in a former page. As moral perception appears to be excluded from the conscious sphere of the brute mind, so neither do brutes appear to possess any reflex power of contemplating the principles of intelligence and science by which, or rather according to which, they act. They appear to possess no power of taking an intellectual recognizance of this intelligence and science so remarkable in many of their actions; and may be considered as possessing only an inferior, or what may be called animal mind, capable of being influenced or directed, but incapable of viewing or appreciating the powers or energies which thus influence and direct it in the most essential of its actions. Man is endowed with the love of science; he, therefore, experiences a delight proper to his nature as a scientific agent, from the contemplation of a means which is instrumental in the accomplishment of an end: he is also gifted with the love of usefulness, and therefore receives a moral delight from the accomplishment of the end itself, which science is the means of effecting. Not so the brute:—the architectural contrivance and discrimination of the Beaver, which is nevertheless much inferior to that of various species of Termites;—the surprising intelligence of the Hive-bee and others of the Apes;—the ingenious mechanism of the Spider:—all these determinations of instinct, which, when viewed in connexion with the animals in whom they are displayed, are so astonishing, form no objects of contemplation to them, while to the human mind they are the subjects of intellectual perception and reflection, advancing in many instances even to sublimity.

When we observe, in the insect world, in beings apparently the most insignificant, an intelligence the most perfect, presenting the most wonderful foresight, provision, and design, we are led at once to the recognition of this intelligence, as a principle which cannot, with any degree of propriety, be attributed to the creature, as properly its own; and we perceive, that in these instances, thus to attribute it to those humble animals, would be to raise them to an eminence far above the most sagacious quadrupeds.

Innumerable are the instances among insects, in which the agency of intellectual and scientific powers, altogether superior to the proper consciousness of the creatures is to be observed; and it may be remarked, that as we descend in the scale of sentient being, this intellectual agency appears to develop itself in a manner proportionably more wonderful; so as to afford the most substantial evidences of the reality of its existence and operation.

That Bees exercise the principles of a science, of which they are wholly unconscious, is beautifully exemplified in the construction of their cells; the general form of these, it is well known, is that which includes a greater space than any other which could be given to them, without leaving a void space between the contiguous cells; each of which, from this circumstance, supplies one of the walls of each of the six cells which surround it. But "it is to be remarked, that though the general form of the cells is hexagonal, that of those first begun is pentagonal, the side next the top of the hive, and by which the comb is attached, being much broader than the rest; whence the comb is more strongly united to the hive than if these cells were of the ordinary

shape. It of course follows, that the base of these cells, instead of being formed like those of the hexagonal cells of three rhomboids, consists of one rhomboid and two trapeziums.

Here then are effects both of geometry and philosophy, although the creatures are neither geometricians nor philosophers. They indeed act precisely as geometricians and philosophers would act, were they to undertake constructing the same thing with the same end in view. Neither can we conceive them in their process of collecting honey and storing it up, as actuated by any reflection upon the nature of the act; or as contemplating a season of winter when their labours must cease. Actuated by an impressing influence to gather and store up, and led to the immediate means and to the best mode of applying them, their consciousness, although it reaches to and embraces the whole of the sensible detail of the operations to which it is directed, and includes a gratification resulting from the exercise of its inferior powers, reaches no further: their conscious world consists of the sensible images of flowers, and fields, and combs, and honey; in these, as to themselves, "they live, and move, and have their being:"—they advance no higher;—they know nothing of a regular hexagon, separate from a honey comb, nor can they reason upon the consequences of their actions.

Reason, intelligence, and science, therefore, cannot, as is asserted by some philosophers, be the result of instinct; or the Bee would certainly be a reasoner: it must be evident, on the contrary, that its consciousness can reach only to the immediate inferior acts themselves, to which it is directed by a potent energy operating upon its nature.

Exercising in voluntary consciousness the inferior powers just mentioned, the animal is led and informed by an influence, impressing its conscious mind, and producing the effects of the most perfect science; thereby accomplishing those objects which constitute the ends of its existence. No effect can be produced without a cause, and the Bee is either a scientific and intellectual being, or it is the instrument of an agency that is of such a quality, operating in and upon its animal mind, in a sphere above its proper perception.

Other less familiar, but not less wonderful instances of the mechanical and even philosophical powers exerted in the actions of insects, are exhibited to us in whatever quarter we contemplate their economy. The larva of a small Moth, (*P. Tinea serratella L.*) constructs a little cylindrical tower for its residence upon the surface of a leaf, and uses the utmost ingenuity to fix and retain it in a position perpendicular to the site, by attaching silken threads from a protuberance at its base to the surrounding surface; and when the stability of its habitation is threatened by external violence, it produces a vacuum by drawing itself up to the summit of its tower, which at other times it completely fills; "and thus as effectually fastens it to the leaf as if an air-pump had been employed;" and in order to preserve the power of forming this vacuum, the insect never eats through the lower epidermis, or inferior surface of his esplanade on the leaf:—yet so insignificant is this little creature as to its bulk, that its castle appears like a small spine on the leaf to which it is attached.

Equally curious is the history of insect architecture in other instances, as in the Aquatic Spider, (*Aranea aquatica,*) whose habitation "is built in the midst of water, and formed, in fact, of air!" This creature spins a frame-work for her intended chamber, which she attaches to the leaves of aquatic plants growing at the bottom of the water, and having spread over the threads which form this frame-work a transparent varnish resembling liquid glass, and very elastic, she next spreads over her belly a pellicle of the same material, and ascending to the surface of the water, by some means not fully ascertained, transfers a bubble of air beneath this pellicle, and then descending to her structure, discharges the bubble into it, until, by successively repeating the operation, she effects the expansion of her aerial sub-aquatic tenement to its proper habitable dimensions.

The entire history, indeed, of the various species of the Spider and of the Bee teems with wonders, and supplies an ample stock of evidence in support of the proposition, that they are guided and instructed by an intelligence which they do not themselves perceive. But as their history may be seen at large in the excellent work on Entomology from which our illustrations from that science have hitherto been derived, I forbear to swell the catalogue; and shall conclude this branch of the subject, by adducing from the same work, two remarkable instances, exemplifying, in the larva of a species of *Myrmeleon,* and in the *Termes fatalis,* the most extraordinary and surprising operations, totally incompatible with any conscious scientific ability of the creatures; appending to these some remarks on the inferences drawn by Messrs. Kirby and Spence, from a singular case of instinct, adapted to contingency in the Humble-Bee.

The first-mentioned insect, whose length, when full-grown, is about half an inch, and whose shape slightly resembles that of the Wood-louse, is an inhabitant of the south of Europe, feeds upon the juices of Ants and other insects, digging a conical hole or pit for the purpose of entrapping them. This it effects by tracing a circle in a soil of loose, dry sand, and excavating with surprising dexterity, a furrow within the included space; loading its flat head by means of one leg, with a portion of the sand, which it jerks adroitly over the boundary; and working backwards till it arrives at the part of the circle whence it started; it then traces a new circle and proceeds with the work, constantly throw-

ing the sand from the interior, till it completes its pit to the bottom or apex. It is indefatigable in its labours, and relieves the leg which it uses as a shovel to load its head, by working through each successive circle in an opposite direction, and thus exercising each leg alternately, always working with the one next the centre. When it meets with stones too large to be jerked from its head, it contrives to get them poised upon its back, and if in ascending the sides of the pit, the stone should be again precipitated, in renewing its attempt to carry it up, it avails itself of the channel made by the falling stone, as a road, against the sides of which it can support and direct its load in the ascent. Stationed at the bottom of its little pit, if an Ant should stumble over the margin it hastens the descent and capture of its prey by the fall of little loads of sand which it jerks in quick succession upon the escaping insect. All this however is surpassed by the *Termites*, whose nests are formed of clay, and are as large as huts, being generally of no less a height than twelve feet, and broad in proportion, and which when in clusters resemble an Indian village, and may at a distance be mistaken for one. The interior of one of these structures presents a most surprising skill and intelligence, both in the construction and appropriation. The apartments, avenues, and communications, consisting of vaulted chambers, built of various materials, galleries constructed spirally for the facility of ascent, arches or bridges of communication, said to be projected, not excavated, are appropriated for royal and other apartments, nurseries, magazines, &c. No one can surely contemplate the gigantic, and at the same time scientific, operations of these wonderful creatures,—which yet are scarcely the fourth of an inch in length,—without feeling struck by the manifestation of an agency far above the discrimination of the subjects in whose actions it is presented, and whose economy is justly characterized as "a miracle of nature."

But the operations of an intelligence in the conduct of the insect race, superior to the conscious faculties of the creature, is made still more manifest by its appearance not only in what has been called blind instinct,—which term itself, rightly interpreted, must imply the existence of controlling influences,—but also by its development in strictly contingent acts, affording evidences of the same intelligent design and adaptation, in agreement with what such particular circumstances require. That such do really occur, the following extract will satisfactorily demonstrate:

"In the course of his ingenious and numerous experiments, M. Huber put under a bell glass about a dozen Humble-Bees, without any store of wax, along with a comb of about ten silken cocoons, so unequal in height, that it was impossible the mass should stand firmly. Its unsteadiness disquieted the Humble-Bees extremely. Their affection for their young led them to mount upon the cocoons, for the sake of imparting warmth to the inclosed little ones, but, in attempting this, the comb tottered so violently, that the scheme was almost impracticable. To remedy this inconvenience, and to make the comb steady, they had recourse to a most ingenious expedient. Two or three bees got upon the comb, stretched themselves over its edge, and with their heads downwards, fixed their fore-feet on the table upon which it stood, whilst with their hind-feet they kept it from falling. In this constrained and painful posture, fresh bees relieving their comrades when weary, did these affectionate little insects support the comb for nearly three days! at the end of this period they had prepared a sufficiency of wax, with which they built pillars that kept it in a firm position: but by some accident afterwards these got displaced, when they had again recourse to their former manœuvre for supplying their place, and this operation they perseveringly continued, until M. Huber, pitying their hard case, relieved them by fixing the object of their attention firmly on the table.

"It is impossible," the authors remark, "not to be struck with the reflection that this most singular fact is inexplicable on the supposition that insects are impelled to their operations by a blind instinct alone. How could mere machines have thus provided for a case, which in a state of nature has probably never occurred to ten nests of Humble-Bees since the creation? If, in this instance, these little animals were not guided by a process of reasoning, what is the distinction between reason and instinct? How could the most profound architect have better adapted the means to the end—how more dexterously shored up a tottering edifice, until his beams and his props were in readiness?"

A process of reasoning, or intellectual deduction, is here certainly incontrovertible, but this, at the same time, is so much beyond the nature and condition of the creature, that we cannot suppose it performed within its proper consciousness. What, then, in this case, and if in this case, in every other, is the distinction between reason and instinct? It is, I apprehend, this: reason is a deduction of intellect within the conscious perception of the subject whose actions exhibit it:—instinct is a similar deduction of intellect, not within, but above the conscious perception of the subject whose actions exhibit it. For a consciousness of possessing and exercising such intelligence cannot exist without elevating its subject to that intellectual freedom which is the proper and distinguishing characteristic of human rationality.

If we ascend to the higher classes of animals, fewer instances occur of those operations which include in them principles of science; and the actions of this character which are to be observed among such animals, do not appear to arise from a conscious free principle, but to be the result of a dictation, similar to that by which the operations of the

insect world are carried on; as in the case of the Beaver in the construction of his dam and hut. In the higher orders of animals, indeed, we lose sight of the more astonishing displays of science which abound in some of the inferior tribes, as in insects;—as if to mark that such science is not the conscious property of the brute nature. Thus the *Mammalia* appear to be more particularly the subjects, in which a moral intelligence is operative, and thus are capable of being rendered more immediately instrumental to the moral uses to which many species of them are directed by man: whereas the insect tribes appear to be more particularly the subjects in which a scientific intelligence is displayed; I say more particularly, because the agencies in all cases are evidently both moral and scientific, although operating diversely, so as to produce the appearance of such distinction; for in every case the influent agency must be moral as regarding the end; and scientific as regarding the means; and in the larger quadrupeds, the effects of moral intelligence are as finely illustrated by the Horse, the Elephant, the Camel, and the Dog, as are the effects of scientific intelligence in the operations of insects. In every case in which science is displayed in the actions of quadrupeds, it is evidently, as respects the creatures, as much above any conscious perception of their own, as it is in the case of insects:—in this respect the Bee and the Beaver are both on a par, and it would be unreasonable to concede a perception of science to the latter, and at the same time to deny it to the former. Neither does the Dog possess any advantage over the Bee or the Beaver in this respect; the instinctive science he displays in the chase is evidently not objectively reflected upon by him, which is manifest from the fact that his ordinary nature is not at all elevated or refined by any perceptions or conclusions which would result from the view of his acute instinctive discriminations. The Dog, as we all know, is a keen and clever sportsman; but if, in this case, his discriminations were the result of reflection,—if he had the power of consciously reflecting in himself, at the time of the chase, on what was proper to be done, and on the best means of procedure; and if this power were not derived from some hidden principle of impulse, acting upon his conscious nature, he would have the power to reflect, subsequently, both upon the means and the action, the whole of which would thus be made the object of his proper reflection. He would thus be able to take an intellectual view of the chase, and of his own peculiar capabilities; the door of analysis would be opened to him; and, contrary to the fact, he would thus advance at least one step in the scale of intellect. If, however, we admit,—what seems to accord alike with reason and with fact—that his conscious mind must have been, in this exercise of his instinct, impressed by an agency above it, no such consequence as that alluded to would follow, from the most wonderful display of adroitness and discrimination. The impression ceasing or subsiding with the requirement, would leave him precisely where it found him; and accordingly we find, that the Hound, who displays the most consummate skill and manœuvre in the chase, remains stationary, and does not ascend into the scale of intellectual consciousness; nor can he, as to intellectual superiority, be ranked above the contemned and undignified Cur.

The incongruities in the actions of brutes, afford again striking proofs, that they act under the operation of an intelligence superior to the plane of their proper perception; and which, if we consider it as affecting them through a limited channel, by particular impressions on their conscious faculties, will account for the wonderful operations performed by many of them, who are not in any wise remarkable for their general sagacity; whose traits of perfection are circumscribed by an exceedingly narrow limit, and which are yet, within that limit, truly astonishing. "With what caution does the hen provide herself a nest in places unfrequented and free from noise and disturbance? When she has laid her eggs in such a manner that she can cover them, what care does she take in turning them frequently that all parts may partake of the vital warmth? When she leaves them to provide for her necessary sustenance, how punctually does she return before they have time to cool, and become incapable of producing an animal? In the summer you see her giving herself greater freedoms, and quitting her care for above two hours together, but in winter, when the rigour of the season would chill the principles of life and destroy the young one, she grows more assiduous in her attendance, and stays away but half the time. When the birth approaches, with how much nicety and attention does she help the chick to break its prison; not to notice her covering it from the injuries of the weather, providing it proper nourishment, and teaching it to help itself; nor to mention her forsaking the nest, if, after the usual time of reckoning, the young one does not make its appearance. A chemical operation could not be followed with greater art and diligence than is seen in the hatching of a chick; though there are many other birds that show an infinitely greater sagacity in all the fore-mentioned particulars.

"But, at the same time, the hen that has all this seeming ingenuity, (which is indeed absolutely necessary for the propagation of the species,) considered in other respects, is without the least glimmerings of thought or common sense. She mistakes a piece of chalk for an egg, and sits upon it in the same manner: she is insensible of any increase or diminution in the number of those she lays: she does not distinguish between her own and those of another species, and when the birth appears, of never so different a bird, will cherish it for her own. In all these circumstances, which

do not carry an immediate regard to the subsistence of herself or her species, she is a very idiot."

A similar incongruity, incompatible with the rational exercise of the intellectual principle of foresight, upon the supposition of that principle being proper to the mind of the creature, is exhibited by the Hamster Rat, (*Mus Cricetus.*) The principle of foresight, as exhibited in this animal, who lays up food, "not for his winter's support, (since during that season he always sleeps,) but for his nourishment previously to the commencement, and after the conclusion of his state of torpidity," cannot be considered as a principle of which he has any consciousness whatever; for had the Hamster a conscious perception and appreciation of such a principle, he would be led to apply it in other cases, as well as in that of storing up food for the preservation of his life; but as if to demonstrate the irrationality of the animal, he attacks, with blind fury, the largest quadruped that comes in his way; instead of seeking safety by flight, like most other creatures in whom the principle of caution is observable; and which a rational foresight would necessarily impel him to, when menaced with destruction by a gigantic adversary.

The Arctic Fox, as Crantz relates, enters the water and splashes with his foot to bring up the fish, which he then seizes; and the Greenland women, profiting by his example, employ with success a similar artifice: the Fox surely does not reflect either upon the act or the means, as the women must do; in him the act is evidently spontaneous, and does not flow from any thought, of which analysis is predicable.

The limitation of the brute mind, and its exclusion from intellectual consciousness, or proper reflection, is also apparent in the inutility of speech to such animals as can be taught to articulate, in effecting any thing beyond imitation; evincing, clearly, the incommunicability of the power of reason to the creature;—while, at the same time, it illustrates the power of the influence of the human mind, as exerted upon the mind and faculties of the animal, and ascertains the limit of that influence. There can be no reasoning without reflection, no reflection without intellectual freedom: if this reflection and this freedom were the attribute of the brute,—how, I ask, should we deny him a share of human consciousness. Does this consciousness, in kind, exist in the brute mind? and are they endowed with it for no other purpose than to produce,—what it could not fail to produce,—the sensible perception of their own individual degradation?—or, would it not follow, upon such an admission of the rationality of brutes, that we should be very likely to see the fable realized of the Mice holding a council to "bell the Cat," and absolutely devising a successful stratagem to effect their purpose? Is there, upon such a principle, any ground for asserting, that, with proper care, we might not be able to rear a few four-legged philosophers and mechanicians, of at least tolerable erudition and science? or rather, the principle being admitted, can it be safely denied that they do not already exist?

I am aware that there is a class of actions which are, in great measure, modifications arising from the influence of education and habit, and which, perhaps, appear more strongly than any others, to favour the supposition that brutes are possessed, in some degree, of the power of analysis and reason; but as this appearance is of so prominent a character, and is so closely allied to their specific mental capabilities, I purpose to enter upon a more particular consideration of it in the course of these essays. I shall only remark, for the present, that the natures of brutes no doubt evince a strong susceptibility of being influenced, within certain limits, by the human mind; but this susceptibility of subservience to human intelligence, so far from militating against the views here offered of the proper nature of brutes, appears rather to strengthen and confirm the position, that they are affected by influences above their own consciousness; and that the wisdom of the Creator has so constituted their natures, as to be affected by the influence of mediate agencies, in order to the production of the various ends which it may be necessary should be accomplished through their instrumentality.

I need scarcely remark that the general views attempted to be established by the foregoing observations, cannot be adequately illustrated in the limited survey of a Preliminary Essay:—their further development must rest upon a more extended examination of the particular functions, which, taken collectively, form the brute economy. Certain it is, however, that the liberty and freedom of the human mind forms the basis of its rationality and intelligence, which is no doubt aided by an influent light and perception received from the source of all Being; the consciousness of which influence connects him more immediately with that Source; —and that the absence of freedom in the brute mind, in this respect forms the basis of its irrationality, and demonstrates that the influent light and perception which gives birth to the surprising actions we see animals perform, forms no part of their conscious nature. Thus brutes are evidently connected with the Author of Creation, though in a manner more remote than man.

The freedom of man consists in his being able to take a survey from an eminence, as it were, of the various discriminations which he himself effects, and which, by various agencies, are effected throughout lower existence; hence, although man possesses a lower or animal mind, similar, as considered distinctly and by itself, to the brute mind, and which inferior mind or region he looks down upon from an intellectual eminence, it is evident that his consciousness respecting even the things of this inferior region is illumined, by the glorious light of intellect and rationality which

is proper to him. The brute, on the contrary, does not survey from an elevated sphere, the discriminations which he himself effects, nor those of nature which are in operation around him; although these discriminations, as effected by himself and by the other subjects of creation around him, are calculated to lead him on in the road of analysis, did he but possess the proper faculty. May we not then infer,—That intellectual and scientific qualities do not become objective in the minds of brutes; or, that the intellectual and scientific actions which they perform, are not reflected upon or contrived by them as such; thus that they possess no intellectual or scientific consciousness, and, consequently, that no intellectual or scientific design can be attributed to them; and, therefore, that so much of intellectual or scientific design as appears conspicuous in their actions, must be the effect of intellectual and scientific powers or energies, acting upon them in a region of their minds above the sphere of their proper consciousness?

Zoological Journal.

MIGRATION OF BIRDS.

The migration of birds is a singular provision of nature, and though the rapidity of their motion makes their passage across the widest seas a matter easily accomplished, yet the instinct which leads them to change their latitude with the seasons is worthy of notice; the more so, that it is also one of the resources of man in a state of nature. The same necessity, that of finding food, seems to actuate both. The Siberian hordes follow the course of vegetation, moving to the south as the winter cold nips the vegetation of the north; and to the north, as the summer heat parches it in the south. The Esquimaux, on the other hand, move to the south in summer, and support themselves by hunting, while they return northward to the sea in winter, to feed upon seals and other breathing natives of the deep, which must keep open holes in the ice to preserve their existence. In like manner, the migratory flights of birds appear to be chiefly influenced by the necessity of seeking food, though partly also by the finding of proper places for rearing their young.

From the nature of their powers of motion, the seasonal migrations of quadrupeds are necessarily limited. If they be inhabitants of islands, they cannot pass over the sea; and upon continents, large rivers, mountains, or desarts, limit their range. In Britain, the stag and the roe, which are found only in the uplands in the warm season, find their way to the warm and sheltered plains in the winter; and on more extensive lands some of the quadrupeds take longer journies; but they are all comparatively limited, and extensive migrations are performed only by those animals that can make their pathways in the sea or the air. The seal, which, during summer, is found in such numbers on the dreary shores of Greenland, Jan Mayen, and Spitzbergen, finds its way to Iceland in the winter; but its migration is limited; and numbers still remain in the most northern regions that have been visited. The inhabitants of the water, have, indeed, less necessity for seasonal changes of abode than those of the land; as the water undergoes less change of temperature, and as some of those sea animals which, like the seal, require to come frequently to the surface to breathe, do not require to remain long above water, or have much of their bodies exposed to the air. The grand inconvenience which they seek to avoid, appears to be the labour of keeping open those breathing holes, without which they could not live under the ice. Or if there is any other instinct, it may be the desire of escaping their enemies, as the bears and the northern people watch them at their holes, and make them a sure and easy prey. Those who have not thought rightly upon the subject, are apt to say that they could not know of those dangers, and therefore could not seek to avoid them without experience. But that is part of the general error into which we are so apt to fall when we begin the study of nature. We make ourselves the standard of comparison, and think of the animals not only as if they had to deal with men, but as if they actually were men themselves. Whereas, in their natural state they need no teaching, and the danger, or the means of life, and the instinct by which the one is avoided, and the other secured, are co-existent. We are in the habit of attributing superior sagacity to animals in certain stages of their being; as we give the "old fox" credit for greater cunning. That may be, indeed, must be, true, as regards the arts of man, because the means to which he resorts for the capture or destruction of animals are not natural, and thus it would be a violation of the law of nature to suppose that they should be met by a natural instinct. In situations which nature produces, the children of nature are never at a loss; but as the contrivances of man are no part of her plans, it would be contrary to the general law to suppose that they should be instinctively provided against these. That they do learn a little wisdom from experience, is a proof that they are not mere machines; that they are something more than mechanical; that life, in the humblest thing that lives, is different in kind from the action of mere matter; and that there runs through the whole of organized being, a philosophy which man, when he thinks of it, must admire, but which he cannot fathom. The animal, or even the plant, is not like an engine, confined to certain movements which it cannot vary, but has a certain range of volition (if we may give it the name) by means of which it can deviate a little from that which would otherwise be its path, if that path contain ought that is dangerous or inconvenient. Thus,

if we would come to the living productions of nature with minds fit for learning those lessons which they are so well calculated for imparting, we must equally avoid two extremes, the one of which would lead us to confound organic being with the mere inorganic clods of the valley, and the other would lead us to confound their instantaneous impulses with deliberation, and measure instinct by the standard of reason.

The migrations of birds are more remarkable, and have been more early and more carefully observed; and that birds should have a greater range, is in perfect accordance with the general law of nature. The apparatus with which the majority of birds are furnished for preparing their food for digestion in the stomach, confines that food within a smaller compass than the food of the quadrupeds. With the exception of the birds of prey, which can rend other animals for their subsistence, and are thus capable of living at all seasons of the year, the birds must subsist upon soft substances, as insects and their larvæ, or the seeds, and green and succulent leaves of plants; while quadrupeds, being furnished with organs of mastication which, along with the saliva, reduce their food to a sort of pulp before it be swallowed, can subsist upon dry leaves and bark, and even upon twigs. Thus, in even the coldest countries, there is still some food for a portion of those quadrupeds that live upon vegetables; and these again afford subsistence for the carnivorous ones, as well as for the more powerful birds of prey. In very cold places too, the smaller quadrupeds, and even some of the larger ones, are so constituted that they *hibernate*, or pass the winter in a state of torpidity, in which they have no necessity for food, and consequently none for change of place.

But in the severity of the northern winter, the food of the feathered tribes fails. The earth and the waters are bound up in ice, so that the worms and larvæ are beyond their reach; the air, which in summer is so peopled with insects, is left without a living thing; the buds of the lowly evergreen shrubs, and those seeds which have fallen to the ground, are hid under that cold but fertilizing mantle of snow, which, cold as it seems, secures the vegetation of the coming summer; the berries and capsules that rise above the snow are soon exhausted; and the buds of the alpine trees are generally so enveloped in resin and other indigestible matters, that they cannot be eaten. Thus the birds must roam in quest of food: nor is it a hardship,—it is a wise provision. Were they to remain, and had they access to the embryos of life in their then state, one season would go far to make the country a desart; and even the birds would be deprived of their summer subsistence for themselves and their young. They are also provided with means by which they can transport themselves, in average states of the weather, without much inconvenience; and thus, while in migration they seek their own immediate comfort, they preserve other races of being. In some of the species, too, they preserve a portion of their own race. It has been mentioned that the young of the swan are unable to migrate the first year; and of most migratory birds, there are always a few that are unable for the fatigue of migration. If the strong did not go away, the whole of the weak, and in cases like that of the swan, the whole of the young, would perish. After the moulting takes place, in most birds, perhaps in all of them in a state of nature, the paternal instinct ceases to operate; they feel no more for the brood of that year. It is each for itself individually during the necessity of the winter; and when the genial warmth of the spring again awakens the more kindly feelings, the objects of those feelings are a new brood. In her march, nature never looks back; her instinct is fixed on the present, and thus leads to the future, without any reference to that experience which the progress of reason and thought requires. In consequence of this, the strong would take the food from the weak, the active from the feeble, and the full-grown from their offspring, if nature were not true to her purpose, and prompted the powerful to wing their way to regions in which food is more easily to be found, and leave the young and the feeble to pick up the fragments that are left, in those places which they are unable to quit.

It has been said that the *teachableness* which is the characteristic of man, has nothing to do with the instincts of the animals; but it does not follow that he should not take a lesson from those instincts; because the instincts of animals and the reason of man are all intended to forward the very same objects—the good of the individual and of the race. Now, in this very fact of the migration of birds, simple and natural as it may seem, and unheeded as it is by careless observers, we have an example worth copying, even in the most refined and best governed society. The strong and the active go upon far journeys, and subsist in distant lands, and leave what food there is for their more helpless brethren. Would men do the same—would they temper the work to the capacity of the worker, in the way that it is done by the instincts of those migratory birds—the world would be spared a deal of misery. It is thus that, in the careful study of nature, man stands reproved at the example of the lower creatures, and learns, by doing by reason as they do by instinct, to be grateful to that Power, "who teacheth us more than the beasts of the field, and maketh us wiser than the fowls of heaven."

The migrating birds that spend part of the year in the British islands, may be divided into two classes,—*summer birds* and *winter birds;* but of both classes some are only *occasional visitants*, and others are mere birds of passage, tarrying only for a short time, as they are on their route to other countries.

The two general classes observe the same law in both of their migratory instincts—the finding of food, and of fit places for the rearing of their young. The general motion for these two purposes is in opposite directions—they move toward warmer regions in search of food, and toward colder ones in order to build their nests. The winter birds come to us for food, and the summer ones for nidification. The winter ones never are those that feed upon land insects, and but seldom those that feed upon seeds; because when they come, there are few of these. They are chiefly water-birds, in some sense or other. They frequent the shores of the seas, the inland lakes, or the margins of springs, rivulets, and rivers, and they swim or wade, or merely run along the bank, according to their nature; and resort to those haunts where their food is to be found with the most unerring certainty. They are all common inhabitants of regions farther to the north, have reared their broods there, and remained till the supply of food began to fail. The extent of their flight southward depends upon the severity of the winter; they come earlier, and extend farther, when that is severe; and their departure is accelerated by a warm spring, and retarded by a cold one. Though the diffusion of the same species of birds be much more extended than that of the same species of quadrupeds, there is still a variation according to the longitude. The birds of passage which appear in Britain are not exactly the same as those either of continental Europe or of America; and that accounts for the appearance of the occasional visiters. A strong wind from the east, during the time of their flight, often wafts a continental bird to our shores; and a strong wind from the west occasionally brings us an American visiter. The flight of birds is, therefore, a sort of augury, though a very different sort from that believed in by the superstitions of antiquity. It has no connexion with the offices or fortunes of men, but it tells what kind of season prevails in those climes whence the visiters come. The early appearance of the winter birds is a sure sign of an early winter in the northern countries; and the early appearance of the summer ones is just as sure a sign of an early and genial spring in the south.

The migration of our winter visitants is a very simple matter; we can easily understand why birds, when their supply of food begins to fail, should fly off in a warm direction; but the return—the general migration northward for the purpose of rearing their young, is, at first consideration, a more difficult matter. Yet when we think a little, the difficulty ceases, and the one movement becomes no more a miracle or a marvel than the other. Very many of the summer birds feed upon insects; and summer insects are more abundant in the northern regions than in the south. This happens particularly with the water-flies, of which there are supposed to be several generations in the course of a long summer's day; and the short night at that season occasions little interruption to their production. The same causes which produce the greater supply of insect food, increase the daily period during which the bird can hunt, and this gives it a farther facility of finding food, over what it would have in the comparatively short days farther to the south. But the breeding time is that at which the birds are called upon for extraordinary labour. During the period that the nest is building, there is a new occupation altogether; and the nests, even of very small birds, are constructed with so much care, that that and the finding of subsistence demand more than the average power of industry. When the female begins to sit on the eggs, the feeding of her partially depends upon the male; and when the young are hatched, their support, till they are in a condition for supporting themselves, requires a considerable portion of the time and industry of both parents. When the young are fledged, the parent birds still require long days: the operation of moulting, by which their tattered plumage is replaced by a new supply, exhausts them: thus they have long days, and also food in abundance, when they are least able to make exertions in search of it; and by the time that the decreasing supply warns them that it is time to seek more southern climes, they are in prime feather and vigorous health, and able to sustain the fatigues of the voyage. The return, too, is, generally speaking, after the autumnal equinox, so that in their migration southward, they have the same advantage of a longer day than in places northward. Thus, even in this common-place matter—a matter which is so common-place that few take the trouble of heeding it, and almost none inquire farther than saying that it is the instinct of birds,—we may trace as perfect a succession of antecedent and consequent, or as we say, of cause and effect, as in any other part of the works or economy of creation. We ought, indeed, to guard very carefully against stopping at the word instinct, or indeed at any other word which is so very general that we cannot attach a clear and definite meaning to it. Those general words are the stumbling-blocks and barriers in the way to knowledge; and when we turn to them who take upon themselves the important business of instruction, and ask them for an *explanation*, they but too frequently give us a *word*, and when we get one, in our own language or in any other, to which we can attach no meaning, the path to knowledge is closed. Perhaps there are few words by which it is more frequently closed than this same word, "instinct;" because we are apt to rest satisfied with it as an ultimate or insulated fact, and never inquire into that chain of phenomena of which it forms a part. Now nothing in nature stands alone: —Creation needs no new fiat; but the succession of events throughout all her works depends on laws which are unerring, because they are not imposed by any thing from

without, but are the very nature and constitution of the beings that appear to obey them. It is this which makes nature so wonderful, which so stamps upon it the impress of an almighty Creator:—its parts and phenomena are millions; the primary power that puts all in motion, is but One.

These reflections have been a little extended, because they are often in danger of being overlooked; and because the tranquil shore of an expansive lake is one of the best scenes for contemplation,—one at which the several elements and their inhabitants are more easily brought together than at almost any other. But it is not the broad expanse of water, with its mountains and its majestic scenery, that is alone worthy of our contemplation. The mountain *tarn*, which gleams out in the bosom of some brown hill or beetling rock, like a gem in the desert, when one does not expect it;—the sheet of glittering water amid encircling forests; and the shelving pool amid undulated green hills, with its margins alternating of white marle, clean pebbles, and sedgy banks, have all their beauty and their respective inhabitants. It is true that the osprey and the fishing-eagle do not there display their feats of strength, and the wild swan does not bring forth her young, or even often visit; but our old friend the heron is there, and she finds new associates with whom she can dwell in peace.

British Naturalist.

WOODCOCK.

SCOLOPAX MINOR.

[Plate XIV.]

Arct. Zool. p. 463, *No.* 365.—Turt. *Syst.* 396. *Scolopax minor*, Lath. *Ind. Orn.* p. 714, *No.* 2. *Gen. Syn.* 3, p. 131.—J. Doughty's *Collection.*

This bird is universally known to our sportsmen. It arrives in Pennsylvania early in March, sometimes sooner; and I doubt not but in mild winters some few remain with us the whole of that season. During the day, they keep to the woods and thickets, and at the approach of evening seek the springs, and open watery places, to feed in. They soon disperse themselves over the country to breed. About the beginning of July, particularly in long-continued hot weather, they descend to the marshy shores of our large rivers, their favourite springs and watery recesses, inland, being chiefly dried up. To the former of these retreats they are pursued by the merciless sportsman, flushed by dogs, and shot down in great numbers. This species of amusement, when eagerly followed, is still more laborious and fatiguing than that of Snipe-shooting; and from the nature of the ground, or cripple as it is usually called, *viz.* deep mire, intersected with old logs, which are covered and hid from sight by high reeds, weeds, and alder bushes, the best dogs are soon tired out; and it is customary with sportsmen, who regularly pursue this diversion, to have two sets of dogs, to relieve each other alternately.

The Woodcock usually begins to lay in April. The nest is placed on the ground, in a retired part of the woods, frequently at the root of an old stump. It is formed of a few withered leaves, and stalks of grass, laid with very little art. The female lays four, sometimes five, eggs, about an inch and a half long, and an inch or rather more in diameter, tapering suddenly to the small end. These are of a dun clay colour, thickly marked with spots of brown, particularly at the great end, and interspersed with others of a very pale purple. The nest of the Woodcock has, in several instances that have come to my knowledge, been found with eggs in February; but its usual time of beginning to lay is early in April. In July, August, and September, they are considered in good order for shooting.

The Woodcock is properly a nocturnal bird, feeding chiefly at night, and seldom stirring about till after sunset. At such times, as well as in the early part of the morning, particularly in spring, he rises by a kind of spiral course, to a considerable height in the air, uttering at times a sudden *quack*, till having gained his utmost height, he hovers around in a wild, irregular manner, making a sort of murmuring sound; then descends with rapidity as he rose. When uttering his common note on the ground, he seems to do it with difficulty, throwing his head towards the earth, and frequently jetting up his tail. These notes and manœuvres are most usual in spring, and are the call of the male to his favourite female. Their food consists of various larvæ, and other aquatic worms, for which, during the evening, they are almost continually turning over the leaves with their bill, or searching in the bogs. Their flesh is reckoned delicious, and prized highly. They remain with us till late in autumn; and on the falling of the first snows, descend from the ranges of the Alleghany, to the lower parts of the country, in great numbers; soon after which, *viz.* in November, they move off to the south.

This bird, in its general figure and manners, greatly resembles the Woodcock of Europe, but is considerably less, and very differently marked below, being an entirely distinct species. A few traits will clearly point out their differences. The lower parts of the European Woodcock are thickly barred with dusky waved lines, on a yellowish white ground. The present species has those parts of a bright ferruginous. The male of the American species weighs from five to six ounces, the female eight: the European twelve. The European Woodcock makes its first appearance in Britain in October and November, that country being in fact only its winter quarters; for early in March they move off to

WOODCOCK.

the northern parts of the continent to breed. The American species, on the contrary, winters in countries south of the United States, arrives here early in March, extends its migrations as far, at least, as the river St. Lawrence, breeds in all the intermediate places, and retires again to the south on the approach of winter. The one migrates from the torrid to the temperate regions; the other from the temperate to the arctic. The two birds, therefore, notwithstanding their names are the same, differ not only in size and markings, but also in native climate. Hence the absurdity of those who would persuade us, that the Woodcock of America crosses the Atlantic to Europe, and *vice versa*. These observations have been thought necessary, from the respectability of some of our own writers, who seem to have adopted this opinion.

How far to the north our Woodcock is found, I am unable to say. It is not mentioned as a bird of Hudson's Bay; and being altogether unknown in the northern parts of Europe, it is very probable that its migrations do not extend to a very high latitude; for it may be laid down as a general rule, that those birds which migrate to the arctic regions in either continent, are very often common to both. The head of the Woodcock is of singular conformation, large, somewhat triangular, and the eye fixed at a remarkable distance from the bill, and high in the head. This construction was necessary to give a greater range of vision, and to secure the eye from injury while the owner is searching in the mire. The flight of the Woodcock is slow. When flushed at any time in the woods, he rises to the height of the bushes or under wood, and almost instantly drops behind them again at a short distance, generally running off for several yards as soon as he touches the ground. The notion that there are two species of Woodcock in this country probably originated from the great difference between the male and female, the latter being considerably the larger.

The male Woodcock is ten inches and a half long, and sixteen inches in extent; bill a brownish flesh colour, black towards the tip, the upper mandible ending in a slight nob, that projects about one-tenth of an inch beyond the lower,* each grooved, and in length somewhat more than two inches and a half; forehead, line over the eye, and whole lower parts, reddish tawny; sides of the neck inclining to ash; between the eye and bill, a slight streak of dark brown; crown, from the fore-part of the eye backwards, black, crossed by three narrow bands of brownish white; cheeks marked with a bar of black, variegated with light brown; edges of the back and of the scapulars, pale bluish white; back and scapulars, deep black, each feather tipt or marbled with light brown and bright ferruginous, with numerous fine zigzag lines of black crossing the lighter parts; quills plain dusky brown; tail black, each feather marked along the outer edge with small spots of pale brown, and ending in narrow tips of a pale drab colour above, and silvery white below; lining of the wing bright rust; legs and feet a pale reddish flesh colour; eye very full and black, seated high, and very far back in the head; weight five ounces and a half, sometimes six.

The female is twelve inches long, and eighteen in extent; weighs eight ounces; and differs also in having the bill very near three inches in length; the black on the back is not quite so intense; and the sides under the wings are slightly barred with dusky.

The young Woodcocks, of a week or ten days old, are covered with down of a brownish white colour, and are marked from the bill, along the crown to the hind-head, with a broad stripe of deep brown; another line of the same passes through the eyes to the hind-head, curving under the eye; from the back to the rudiments of the tail runs another of the same tint, and also on the sides under the wings; the throat and breast are considerably tinged with rufous; and the quills, at this age, are just bursting from their light blue sheaths, and appear marbled as in the old birds; the legs and bill are of a pale purplish ash colour, the latter about an inch long. When taken, they utter a long, clear, but feeble, *peep*, not louder than that of a mouse. They are far inferior to young Partridges in running and skulking; and should the female unfortunately be killed, may easily be taken on the spot.

* Mr. Pennant, (Arct. Zool. p. 463.) in describing the American Woodcock says, that the lower mandible is much shorter than the upper. From the appearance of his figure it is evident that the specimen from which that and his description were taken, had lost nearly half an inch from the lower mandible, probably broken off by accident. Turton and others have repeated this mistake.

INDIAN HUNTERS.

A good hunter is, among the Indians, as much distinguished as a valiant warrior, and is always more wise and less depraved. When hunting, every Indian is attentive to his duty, and nothing but his duty. He forgets quarrelling, gaming, (which also is one of his vices,) and even his ferocity. Some of the traders, who follow every year in their train, have assured me that the winter Indian and the summer Indian are totally different beings. During summer, he is always in a state of indolence, which degrades and brutifies man in his most civilized and best educated state: the winter he passes in labour, which tames and softens characters the most reckless and ferocious. In hunting, the Indians are indefatigable, though engaged in exercise incessant and most laborious; and the success with which they pursue their various game through both prairies and forests, in lakes and rivers, displays strongly the acuteness of their understandings.

Beltrami.

TREATISE ON BREAKING DOGS.

One of the most important things to the shooter is the possession of a good setter or pointer Dog. On this depends, in a great measure, his pleasure and success—and this necessary auxiliary to his recreations is within the reach of every man, who can either shoot well, or will give as much time and perseverance as the subject requires. To break a Dog properly, it is necessary to possess skill, patience, and perseverance; and without these two latter qualities, it will be useless for any one to undertake it. It is to the want of these properties, we may attribute the fact of being overrun with useless or half-broken Dogs. It will be well for every young sportsman to consider this subject properly, and to make himself acquainted with every rule necessary to the attainment of this grand object; and, under these considerations, I have, by consulting various authors, and my own experience, submitted the following rules, which, if strictly followed, cannot fail to complete the education of a Dog.

In choosing a Dog, it is difficult to say which of the two breeds is best, viz. the setter or pointer; they both possess the same qualities, and the choice must be pretty much a matter of fancy.* I have always given preference to the setter, because the best Dog I ever owned, or saw, was a setter Dog. Others give preference to pointer Dogs, because their experience warranted the same determination. The main point, however, to decide, is, whether they have descended from an indubitable stock; this ascertained, the rest depends altogether on their education. Those who favour the latter, argue that they possess more fleetness, bottom, and tractability, and can withstand the fatigue and heat of summer without water better than setters. To this last reason I cheerfully subscribe, but the former I doubt. The setter has advantages over the other in cold weather, is more willing to enter thickets and difficult places, and takes to water more freely, and possesses an equal degree of sagacity—however, the choice being made, the master should procure the Dog before he is six months old. This is necessary, in order to give him all the advantages of an early education, and is of more importance than many persons are aware of; for the impressions given to a young Dog, are like those on youth—the strongest; beside, the Dog is growing up by his master's side, becomes habituated to his actions, language, and government, and gives advantages, when the period arrives for training in the field, which can then only be properly appreciated. *Every sportsman should break his own Dog.* This is of the first importance, if he wishes to possess a good one and enjoy comfort while hunting him. A Dog purchased of a stranger, or given to another to break, has, in a great mea-

* A Dog should not be chosen solely for his capacity to stand at game, as this principle is not always confined to the pointer or setter Dog. I knew a Dog which was half bull, set a partridge with as much stanchness as any setter Dog; and I have also seen a hound, and spaniel, do the same thing; and Daniels, in his Rural Sports, makes mention of a celebrated sow, so perfect in this habit, as to rival the most sagacious pointer or setter.

sure, to undergo a severe training and a second course of education, when he comes into the possession of his new master, before he is habituated to this master's style—hence the strong necessity of every sportsman attending to the education of his own Dog. To this circumstance may be attributed the reason, why many gentlemen, who, being delighted with the actions of strange Dogs, have purchased them at extravagant prices, and on trial of these Dogs, separately from their original owners, have proved but inferior animals; and, being disgusted, have parted with them immediately, at any price, and the first vender cursed as a swindling knave. But a little reflection will convince any reasonable person, that the fault is neither the Dog's nor the original owners, but is entirely owing to the first impressions, given during the season of immaturity, having been so radical as to admit of no alteration by the second owner. Few Dogs will hunt during the first and second year's training, so well with a stranger as with the man who broke them; and it will be well for all who wish to purchase young Dogs, (no matter how exalted their characters,) to try them separately from their masters.

Another important thing is worthy of great consideration, and this is the impropriety of lending Dogs—at all events, if a gentleman has feelings of generosity sufficient to oblige his friend in this way, he ought never to do so until after the second season of training; for it is not until this period that a Dog may be said to have completed his education, or that his impressions are deep-rooted. The practice of lending Dogs is certainly a bad one, and frequently the lent Dog is injured by his master's generosity. But then this description of sportsmen, when appealed to, argues in himself—how can I disoblige my friend? I have enjoyed pleasure with my Dog and gun; he has none. Shall I not contribute to him the same means of enjoyment, which I have used myself so often? But, still, I fear injury to my Dog. And then reflecting that he was created a social being, and placed in circumstances whereby he may add, perhaps, one day of pleasure to his importunate friend, he casts off the unnatural feelings of selfishness, and fulfils this duty of social life.

I do not recommend that a Dog should be loaned, only under particular circumstances, and the owner may do so, by proper discrimination, without as much risk of injuring the Dog, as the chance of offending his friend, or bearing the imputation of being a *selfish* man.

In naming a Dog, it is recommended that short and expressive names, (of one syllable, if possible,) should be adopted, and avoid all those words ending in o, or sounding like the words used in training; also, to adopt other names for those common-place words now in use, as great confusion sometimes prevails in consequence of two or three Dogs hunting together which are named alike. I once had the prospect of a fine day's shooting entirely ruined from this circumstance. My Dog and my friend's being named so much alike, that the former kept around my heels the whole day, in consequence of the latter, (which was a headstrong dog,) having been hallooed at continually by his master.

Supposing now your Dog is six months old, it will be necessary that he should follow you in your walks abroad, and repeatedly taken to the fields and suffered to race about, and enter bushes and thickets, and chase every bird without restraint. This will give him spirit and animation, which will continually grow on him; and it is not advisable to check or speak harshly to him, but encourage the spirited disposition as much as possible. You should always, before feeding him, make him crouch at your feet, using, at the same time, the words, "down," or "close," or "down charge;" or it is better to habituate him to do so, by raising your hand and saying softly, *hush*. Endeavour, at all times, to use him to words spoken in a low voice, as some future day will convince you of the necessity of doing so, when you may be surrounded with scattered game—silence, then, will, in a great measure, guarantee your success, and these early lessons will have, at that period, a salutary effect on him; and, as a reward to his obedience, feed him. The same plan may, and should be used to learn him to stand at a piece of meat. This should be done by using the word "*toho.*" This simple word, so universally known and adopted, has been proved by experience, to act as magic on the instinct of the setter and pointer Dogs; and it is doubtful whether another word could be adopted to supply its place with the same success; therefore it should be very early engrafted on his memory, as it is the most important of the very few words necessary to break a Dog. If he is brought to stand, (and a very few lessons will answer the purpose,) give him the meat that was before him. By rewarding a young Dog in this way, with food, he may be learned many things, and it is well worth the trial of learning him to bring articles, as a ball, gloves, apples, or sticks; and always, when obedient, reward him with food. Idle moments may be frequently spent in this way, to learn a young Dog a variety of little things of this kind; not that these things are intrinsically valuable in themselves, but they habituate a Dog to strict obedience, and the sounds and actions used in learning him these little tricks are so various and many, and he becomes so familiar to your words and actions, that when his services at some future day, may be required for more important affairs, his obedience can be depended on, and his readiness to serve you will, in a measure, become mechanical, because he has been so completely schooled to your expressions. In all your endeavours, at this age, to learn him, do it by rewarding; and never, (if it is possible for you to avoid it,) chas-

tise him. This can be done if the tutor will be patient. Chastisement will dispirit and frighten a young Dog, when the opposite treatment will make him love and obey you. The disposition in children to learn, has frequently been checked, if not destroyed, by severity; and disgust to the book and school excited by harshness on the part of the master; therefore, when you give your young Dog meat, make him halt at the word "toho," before he is suffered to eat it, and a very few lessons, in this way, will so habituate him to that expression, that, so soon as he, in the field, sees another Dog standing at game, will understand the word when you remind him of it. The capacity of a young Dog will admit of much instruction, but if you wish your instruction to be effective, in things pertaining to the field, you should give him tuition at home and before he has hunted in company with another Dog. Many persons condemn this plan, as being different altogether from the duties of the field, but the same reasons may be urged against the necessity of training our military in the streets, as being unlike the field of war; but does not the soldier often call into exercise, in the field of battle, those tactics he learned at home? It is in consequence of many persons, neglect of, or prejudice against, this early instruction, that many Dogs are only half what they might have been.

We now suppose your Dog to be nine months old; he is then strong and has attained nearly his full size, and at the proper age to commence training in the field. He should then be taken, (if possible,) in company with an old, well-broken Dog, without the gun, until he acquires the habit of ranging pretty well; and to make him spirited, he should be suffered to chase the birds as they rise. This will excite much keenness and love for hunting, as well as a disposition to range well. It is all important, that a Dog should possess great spirit; for an animal of this kind can be trained with less difficulty and more satisfaction, than one of the contrary disposition. It is much easier to check an impetuous Dog, than give spirit to one deficient of this principle. When you find that your young Dog is sufficiently keen after game, you, moderately and by gradual means, should check him, and then you may hunt him with a gun; and as this is, perhaps, the first time he has seen or heard a gun discharged, it may have the effect of frightening him from you, and making him return home. This sometimes proves to be an unpleasant and unfortunate circumstance, as it may be found difficult to get him to follow you to the field again, should you have a gun in your hand. In this case, I would advise, that he be frequently taken to the field, and tied to some stake or tree, and having provided a pistol, commence firing at some distance from him, gradually approaching the Dog at every few discharges, until you think firing immediately over him will not materially affect him. It is proper, also, to take some meat, and, at every few discharges, pause, feed, and caress him. At first, in all probability, he will make several efforts to escape, but finding them unavailing, he will lie down in a sullen mood, until, by a number of discharges, he becomes regardless of the gun.

This plan I have followed successfully, and have known others to do so too; but the best and most natural plan, however, is, to hunt the young Dog in company with several others, and not separately, and the carelessness of these Dogs to the report of the gun, will give him confidence also; and a few hours shooting will entirely divest him of all fear of the gun.

The sportsman should not fail to caress him at every fire, and if he entertains doubts of his stability, he should provide a small quantity of meat to be given him. This will gain his confidence, when all other means prove fruitless, and by giving him the birds to smell and mouth, he will get an insight into the object of your pursuit, and make him familiar to the scent of the game also. This is an important period with the Dog, and the master should by no means leave it unimproved; for, half a day followed up strictly on this principle, will excite spirit, and his fear being overcome, he will take pleasure in ranging out freely with the other Dogs. Many young Dogs, at this time, are ruined, because the fear which takes hold of a Dog sinks him spiritless to the ground, or deranges him for the time, when anger or impatience in the sportsman causes him to treat the frightened animal with undue severity, discourages him from further hunting, and is useless ever after.

When you have hunted your Dog several days, the style of his hunting should be strictly regarded by you, as of the next importance. If he ranges with his head high and nose well up, there will be no difficulty in breaking him to your mind; but if, on the contrary, he should hunt with his nose to the ground, in a manner as if trailing game, the sportsman will have many difficulties to surmount before he can break him of this habit. Every effort, however, should be made to correct it; for a Dog of this kind will frequently flush game before he can possibly scent it, owing to the circumstance of his nose being confined in the grass and stubble, and following the trail of the birds. Game always become restless, and will generally take wing, if an object which pursues them follows directly in their wake; and this is the case with all Dogs which hunt nose down.

But it is different with a Dog that ranges with a high head, as birds, when they find a Dog pass backwards and forwards promiscuously, will either rest quiet or merely endeavour to avoid them by running, and do not appear alarmed so long as the Dog will keep from trailing them. Beside, it gives this Dog a greater superiority over the other, for the reason that all effluvium ascends and is scattered more or less, according to the temperature of the

atmosphere, sometimes spreading over a considerable surface; therefore, when a Dog by ranging with a high head, enters the area of this effluvium, his olfactory nerves detect the course whence it proceeds, and then his sphere of ranging contracts gradually, until it becomes a gentle, straight-forward trot, and by a final stop marks the spot where the game lies concealed. Effluvium, like smoke, ascends rapidly or skims the surface of the ground, according to the density or rarity of the air, and should the wind be blowing gently on damp and lowering days, or when the atmosphere is dense, a Dog that ranges with his nose well up, will smell or receive this effluvium at a most astonishing distance: and this explains the great difference which is manifested frequently by the same Dog. Therefore, the advantage of this description of Dogs over the former, is so great, that it is worth every experiment to make a Dog hunt with his nose well up. And to effect this, it is necessary that whenever your Dog shows a disposition to put his nose to the ground, he should be spoken to sharply, "hold up," and repeated angrily every time he acts in this way. This will make him uneasy, and generally break him from a sneaking walk or trot into a handsome canter, and frequent repetition of this scolding will generally produce the desired effect. But should simple means, like these, prove unavailing, after a fair and patient trial, the sportsman must resort to a more severe measure; and this will be the application of the "puzzle-peg," or more properly, the "muzzle-peg."* The advantage of this instrument is, to prevent the Dog from putting his nose to the ground, and when hunting in high grass or stubble, by reason of its continually catching the weeds, &c., creates so much uneasiness to the Dog, that he will be obliged to keep his head high, in order to avoid these troublesome objects; and a few hours, on several days, will give him a habit of ranging with his nose up, and if, while in this position, he should be brought to scent and stand game, his instinct will soon point out the superior manner of the two, and he will most likely ever after follow it, for most of the sagacious traits in Dogs are the effect of experience.

* The "muzzle-peg" is a piece of pine wood, in shape like the figure, of about three fourths of an inch in thickness, and two and a half inches broad at one end, to taper down to about one and a half inches to the other end, and of sufficient length to pass from the Dog's throat, under his jaw, eight inches beyond his nose. The broad end should be fastened to a strap, in order to buckle round his neck; and the smaller end fastened inside or behind his lower tusks, by means of a buckskin cord. This instrument will put the Dog to much inconvenience, at first, and he will try his best to rid himself of it; but finding his efforts unavailing, will follow quietly after you for some time, but will soon become accustomed to it, and then range about.

It should always be the sportsman's peculiar care, to keep his Dog steady at his work, and never suffer him to loiter about, or stand gazing at the other Dogs. But to effect this, it is necessary that the sportsman himself be active and persevering; for if the master will loiter and idle his time by sitting on a stump or fence, it is natural to suppose that in the early stages of training, the Dog will follow his example, either by resting in the field or at his master's feet, or stand gazing at him or the other Dogs: therefore give force to your precepts by examples of industry, and whenever your Dog shows a disposition to lag, or smell the ground for small birds or ground mice, speak out to him sharply—"hold up!" "take care, sirrah!" This will be sufficient to answer every purpose. I.

(To be continued.)

FINAL ANSWER TO I. T. S.

Gentlemen,

I will not occupy much of your space in replying to the last communication of I. T. S. The subject of controversy between us can never, I apprehend, be satisfactorily decided by rules of philosophy, or correctly illustrated by diagram. The *practice* of the sportsman must, in the end, determine him, and his deliberation and judgment alone, render him proficient in the art. If, in my argument in a former number, with reference to the diagram of I. T. S., I adopted a mode of reasoning which he supposes irrelevant to the case, I regret it as sincerely as himself; as it was not my wish to misapprehend him. Upon a review, however, of that argument, and applying it to his late illustration of the subject, I find so little reason for retraction, that I am willing to go with him from his own starting place, and let his principle commence at the precise point of time he wishes. It is in the latitude of time which your correspondent allows for the passage of the contents of the gun to its object, that his great mistake lies; and when he takes as his ground-work, the same time for the effect of the shot on passing from the muzzle, as for the flight of the bird in 87 feet, he cannot expect to build upon it a system of reasoning convincing or satisfactory to your readers. The precise period of time consumed in the passage of the contents of a gun to the object, cannot be correctly determined; but admitting, as I. T. S. does, in *practical* shooting, that six inches allowance is necessary for a duck in his ordinary flight, at sixty yards distance, and supposing the duck to fly at the rate of 87 feet in the second; it follows that but the 174th part of a second would elapse for the effect of the shot, from the first touch of the trigger. And supposing,

again, a sensible interval of time to ensue after the finger begins to press the trigger, before the load issues from the barrel, does it not seem evident, that were that interval sunk by placing the load at the muzzle, when bearing full on the object, that the discharge and effect must be so nearly simultaneous, as hardly to admit of a perceptible difference in time? Now, going upon the principle that I support, of "keeping up the swing of the gun, in proportion to the flight of the bird," and not altering its *bearing* upon it when pulling trigger, the load is always, as it were, kept at the muzzle of the gun. No time being lost in the passage of the contents from the breech or in pulling trigger, and allowing a certain lateral, in connexion with the forward force of the shot, and several feet for its spread, it appears almost impossible, with good cover or aim, for a bird ever to escape. The mode of shooting in advance, I am aware, is practised by many sportsmen, but it appears to be, as I before observed, the consequence of habit and confirmed prejudice, and, in a great measure, attributable to the fact of the swing of the gun being stopped at the time of pulling trigger, thereby rendering a certain allowance necessary. At best, it is but a very uncertain mode of shooting, and liable to too much discretionary exercise, which the ardour of the sportsman seldom admits of, and which can never be relied on in emergencies. Let I. T. S. but try the experiment of shooting on my plan, on his next excursion to the Chesapeake, and I feel assured he will never again resort to his own. I have conversed with many of our best shots on the subject, who all decidedly coincide with me in my views. I was much amused with the reply of an old sportsman, (a man who follows shooting for a living, and, than whom few better shots can be found,) to a question put to him, as to his mode of directing the gun. He had just come out of the marsh, covered with mud and mire, and with the best evidence of his success—a bag full of game. "B.," said I, "were a duck to pass you at fifty or sixty yards distance, it is more than probable you could kill it." "I think so." "Tell me, now, in taking your aim, how much headway would you give; six inches or a foot?" "Headway," replied he smiling; "why, as for that, I think I might kill it as soon by giving it a foot *ahead* as a foot *behind*."

The subject having now been viewed in all its different bearings, I am satisfied to leave it to sportsmen to pronounce on the merits of our respective modes; and, on closing, cannot but express my gratification at the courtesy and forbearance which has been manifested by your correspondent throughout this discussion, and the candour with which he has admitted or acknowledged the correctness and force of my argument, when convinced in his mind of its truth.

SPORTSMAN.

Count de Launay's

DESCRIPTION OF A FOX HUNT.

Sir—By my vord, Mr. Redacteur, I voud me much relate von vare great chasse I have me just vitnessed avec des chiens de Monsieur Craving, at the chateau of mi Lor Chichester, von league from this ville.

I vas me sitting at mine dejeuné ce matin ven I view von gentlemans ride past upon a vite cheval, vit him a coleure de rouge coat on, and von long vip in him hand. Vat for dis gentleman coat? I demandé of de vaiter; shall it be de king? "No, sare," said he, "it be Monsieur Jacque Bunce going a honting."—"Vot him hunt?" said I.—"De Fox," said he. "Ah de Renard! I have me moch heard of this hont de Renard in Angleterre; I most me certainly go. I vill me get my pistolets tout suite."—"You must have an orse," said the vaiter. "Certainement!" said I; "a vite orse same as Monsieur Bunce:" but the stoopid vellow got me von black, at vich I vas much enragé, as I thought I vood be ridicule, for I did me see another gentlemans on a vite orse same as Monsieur Bunce; and de stoopid vellow brought von saddle sans chose pour les pistolets, and so being in moch hurry I did me pot them in mine surtout poche."

A great fracas vas at my behind, and ven I look me round I shall find von fine English lady attired in rouge and blue, gallop along de street in moch haste, and anoder gentlemans on anoder vite cheval same as Monsieur Bunce gallop vit her, and him had rouge on also.

At de chateau vare many peoples had come, and a large flock of dogs, and two gentlemens in rouge habits and black bonnets, who vere grand chasseurs under Monsieur Craving, de grand maitre de chiens.—"Ou est votre mousquet? vere is your musket?" said I to von of these gentlemens, but he touch him bonnet and said noting. Then com Monsieur Craving, and they both did de same to him. "How be de vind, George?" said he to the grossest von; "shall ve have moch scent to-day?"—"De vind be in de East," said George, "but I think de scent may do."—"Vill you accept som scent from me?" said I to George, offering him von flacon. "Be it gin?" said he. "No, not gin, but bouquet du Roi, vare fine scent, trois franc cinque sous per bouteille." By my vord the stoopid dem vellow he did him drink de perfume, and then he spit it out.

"Ve shall go," said Monsieur Craving; and away ve all vent in moch speed. "Vere de Renard? vere de Renard?" I demanded. "Hold your jaw!" said von gentlemans in de bonnet, "you vill make him steal away."—"Ah, him steal moch poulet, moch turque, n'est-ce-pas? de same in France, de same in France; him vare great voleur; I shall him shoot, I shall him shoot!"

"De gentleman be mad," said Monsieur Craving, ven I produced my pistolet. "Hav a care, George, he vill himself shoot."—"Pas de tout! pas de tout! I vill me shoot de Renard sans doute, but not non myself." Just den dere vas great scream—Oh dear! him poor gentlemans be moch hurt I fear.—"Gone avay! gone avay! forvard! forvard! hoop! hoop! tallivo! tallivo!" shouted Monsieur Craving and all de other gentlemens: some blew a trumpet, and de flock of dogs came up howling and barking. "Old hard!" said Monsieur Craving, "old hard! Pray, sare, do you think you can catch de Fox yourself?" said he. "I vill me try," said I, "but vere him be?"—"Dere him go," said Monsieur Bunce, as de dogs began to howl vonce more, and all de gentlemens gallop after them. "I vill be first," I said. So I charge de whole flock of dogs, and knocked over three of dem. Oh how dem swore because I beat dem all! Then ve got to end of vood, and I thought de Renard should him come back again; but Monsieur Bunce he jomped a gate, and then look back at me, and said, "now, you tinker, catch dem if you can." De gate vas open, and I gallop along in great haste, for ve vare all in moch hurry; but I arrive at von vare large fossé, and de lady in rouge demandé voud I take it? "Si vous plait, madame:" and I spur mine orse, but de stoopid bête tombled into it; and voud you believe it, but de lady jomp over it and me and my orse?

"Pick up de pieces," said von gentlemans as he passed by. "Vot, old poy, are you floored already?" said anoder. "Com to me, and I vill help you up," said a third, as him gallop along. Indeed they all make some compliment as they pass; but my orse him manage to get up, and I found I should not be much damage; so I gallop again over de soft grass for great distance, mine orse blowing vare moch.

"This dem Fox will never stop," I said: "by my vord it is quite ridicule riding after him in this stoopid manner; he will surely never dare find his way back to mi Lor Chichester's poulets; so vy should ve fatigue us to hont him any further."

"Shov along, ye skrew," said a gentlemans, vondering at vot I vos stop; "de Fox is sinking."—"Vot him no swim? but vere de vater?"—"Dere he go, up de hill," said he; but how de Fox could sink up de hill I could me not discover; but Monsieur George make moch noise, as did Monsieur Craving and all de oder gentlemens; and at last I saw de dogs overtake de Renard near von vood. He vas kill, but Monsieur George took him up and vip de dogs avay, and all de gentlemens got off orse and valk about; and Monsieur Craving com to me and said, "Sare, you vare near kill my best hound, but make me de pleasure to accept de broosh."—"Thank you, sare?" said I; "but I should prefere von comb," parceque mine hair vas moch disorder; and Monsieur Craving laugh and say, "it be de Fox's broosh I offer you sare; you have rode vare vell, and I am moch think you will make von vare fine sporsman." But I say to him, "I thank you, Monsieur Craving, for dis compliment; but, by my vord, your English hont de Renard is much ridicule: you have now com trois league after dis dem animal, tired your horse, dirty your breeches, tore your habit, throw mod in my face, and ven you catch de creature you give him to de dog. If you desire a Renard, set von trap, and catch him by de leg, or let Monsieur George shoot him vit de mousquet as him com out of de vood, but never give yourself de trouble of honting him in this fashion."

But Monsieur Craving him laugh moch, and say, "Sare, I tink you shall not comprehend our sport."—"Perhaps not," I say, "because I shall not tink it sport: derefore I vill you vish bon jour."—Your vare obedient and vare humble servant, C—— DE LAUNAY.

T t

PIGEON SHOOTING,

(BY THE NEW YORK CLUB.)

Of all the themes that writers ever chose
To try their wits upon in verse or prose,
A *Pigeon-shooting match* would surely be
The last selected for sweet poesy.
But having made this choice, proceed we now,
Despite the frown that sits on any brow.
In airy nothings we take no delight,
A vision is no more, however bright;
No fancied pictures you will here behold,
Plain truth, rough hewn, alone, these lines unfold.

"We now are on the ground; come, let us see,
Where shall we stand? why faith, beneath this tree;
Here, sheltered from the sun, the breezes court,
And pleasantly enjoy this old mens' sport."
Behold the trapper off with shoes and coat,
While anxious D***s opens wide his throat,
And roars, come M****ll! B****s! H****n! come,
Let's make a match for any modest sum.
But S** V********n swears he won't agree
Unless the pigeons are as big as he.
I***c C**t**t is willing to go in
If their good landlord buys of him his gin.
R***r will shoot a match (oh, the great gods!)
With any one who gives him lots of odds.
Then M*****n offers B*****y a bet,
One out of ten, which makes the old man fret.

"*Ya* know I cannot *do't*, and *Jarvis, tew*,
"And if I could, why hang me if I *dew*."
W**d is content, (a good, kind-hearted soul,)
Either to shoot, or help to drain a bowl.
Whilst honest H****s shouts, "Confound my eyes!
Let's go to work! such humbugs I despise."
At length a match is made, six on a side;
And now to kill his birds is each man's pride.
J. M****ll first advances to the scratch,
A gunner, whom 'tis pretty hard to match.
"I'm ready—pull!" away the pigeon flies,
The gun 's discharged, and it as certain dies.
Next quick-eyed B****s steps into his place,
A man whose shooting can no one disgrace.
He kills his bird, and laughs to see it fall,
Because it flew as though not struck at all.
There, with a single gun, goes A****w H****n;
The bird is off—it falls as dead as *mutton*.
"Of that I was quite sure—I knew she 'd kill,
"Just hold her strait, and she'll do what you will."
Now comes V********n, many call him S*m,
A worthy fellow, with a deal of whim,
"Is that bird fat?" he asks, "which way 's his head?
"I want to have a chance to shoot him dead.
"There, let him go—I'm ready!" out it tumbles,
He kills it coming, then at the trapper grumbles,
"Why don't you mind? I want the bird thrown higher,
"Do so again, and damme if I fire."
And now left-handed R***r toes the mark,
A better creature ne'er saw Noah's ark.
He shuffles at the score, uplifts his gun,
Sharply cries "Pull!" and then the work is done.
The bird has scarcely time to leave the spot
Before he feels the effect of patent shot.
The shooter then, with length of back opprest,
Stooping, turns round, and brings his gun to rest.
Then B***n W**d the scratch approaching slow,
Says, "I can't shoot;" unwilling seems to go,
At length he says, "I'm ready, pull the string!"
The bird is loos'd, his gun is heard to ring,
The inoffensive pigeon thinks to fly,
But, like too many more, is doomed to die.
"'Twas all an accident," the gunner says,
But men will lie in these degenerate days.
While pious F*****k cries, "if thus you serve us,
"From all such *accidents* may God preserve us!"
Next I. C**t**t, with broad good natur'd face,
His eye upon his lock, assumes his place,
Says calmly, "I am ready, let him go;"
The pigeon says, I will, the gun says no!

A fair and honest chance the bird receives,
But the fell shot too sure his body cleaves.
Thirty or forty yards he gets away,
Then takes a last farewell of the bright day.
And now the name of B*****y is bawl'd,
Or *English whitehead*, as by some he's call'd.
Up to the score he moves with little ease,
"I'm *ready*, sir, now let go when *ya* please."
The obedient trapper, to his duty true,
Pull'd on the string, away the pigeon flew;
His big-bored gun re-echoes o'er the field,
And the poor bird is forced his life to yield.
Now J***h S******d, quiet, easy soul,
Is call'd, as being next upon the roll;
He comes directly, asks where he shall stand,
Then firmly puts his foot upon the sand,
"There, let *un* go! I'll kill *un* sure as death."
His word 's his bond, the bird 's deprivd of breath.
A truer aim at pigeons few men take,
And a real crack shot he no doubt will make.
Next in rotation see J. H****s come,
A real good fellow, any thing but grum;
Lively and hearty, honest as the day,
Which, for a Yorkshireman, is much to say;
Half through his nose he bids the trapper "pull!"
High the bird flies, with shot he fills him full;
Laughing, he leaves the scratch, despite the slaughter,
Goes to the bar, and calls for gin and water.
Then R. B. F*****k, with his roguish look,
Stepp'd from the crowd, and strait his station took;
The trap is open'd, up the pigeon mounts,
And soon the blood flows from its vital founts.
Last comes the cook, by some call'd blund'ring D***s,
By all who know him thought a *rara avis*.
Dearly he loves the poet and his song,
Always means right, though mostly doing wrong.
He tells the trapper to let go his bird—
'Tis done—and yet no gun's report is heard:
For he a borrow'd instrument had got,
Whose trigger went too hard—he lost his shot.
The outscouts now are heard, bang! bang! pop! pop!
But the freed pigeon is not seen to drop;
Over the fields and woods he flies along,
They stare and swear that one poor bird is gone.

Thus they go on, and shoot at ten birds each;
Some they knock down, while some fly out of reach.
Now one gun snaps, another misses fire,
Which make their owners grumble loud in ire;
At length they 're through—the clerk is ask'd to say
Which contending squad has won the day.

This being ascertained, the winners smile,
But with no taunting jibes their mouths defile.
Then to the house resort, (except some stickers,)
And there regale them with the Major's* liquors.

D. J.

* Major Rose, who formerly kept the tavern on the ground where the New Pigeon Club shot their matches.

PROSPECT OF GAME.

The season for shooting Woodcocks will open on the 5th of July, according to law, but the work of destruction has already commenced in the neighbourhood of this city, and some parts of New Jersey. The birds, however, are small, and poor, and can only be valued for the sport of hunting them, and not for their fitness for the table. The season, thus far, has been favourable to the increase of this species of game, which indeed appears to be more plentiful than for many preceding years, there being scarcely a spot of ground adapted to the habits of the Woodcock, which does not contain them.

This is a fortunate thing for our sportsmen, whose regret at the severities of the past winter will find some alleviation in being able to pursue this bird in anticipation of the usual fall's sport after quails—and I would here most strenuously advise my fellow sportsmen, especially those whose impatience mostly outweighs their prudence—to let the season for woodcock and rail suffice them for the year, and in no instance during the approaching fall, destroy quails—one winter's protection to these birds, will repair, in a great measure, the havoc, which the protracted snows of the past winter have made on this favourite game, and the foresight and prudence of one year will advance the means of recreation two-fold.

I am pleased to say, and it may be satisfactory to many sportsmen to know, that there is yet a remnant of quails in existence, which has been cherished either by some friendly hand, or the vigorous constitutions of the birds have buffeted the inclemencies of a winter unprecedented in its severities. Through the middle and lower part of New Jersey, as far as Cape May, an occasional "*Bob White*" may be heard, and in the neighbourhood of Philadelphia, and counties adjacent, as well as other States, this bird is also heard.

I was informed that a gentleman, during the latter part of this spring, who was standing in front of his house, which borders the river Delaware, a few miles above this city, observed some unusual appearance in the water, and seemed like a number of rats swimming to the shore; on approaching the spot, however, he discovered it to be a covey of quails, which had, no doubt, attempted to pass from Jersey to Pennsylvania, but, by reason of the width of the river, they were unable to do so, and settling in the water, were obliged to make up the deficiency in their flight by swimming; through wet and fatigue they were nearly exhausted, but a few minutes rest recruited their strength, and enabled them to continue their migration.

This circumstance, in some measure, accounts for the reason, why, during harvest, and until the middle of September, the region about Philadelphia has hitherto been so plentifully sprinkled with coveys of quails—for, being of a rich soil, and affording abundant food, it invites the migration of these birds from New Jersey, and which remain with us until the farmers plough their ground again for the winter's grain, when the means of subsistence being in a great measure destroyed, they commence running until the Delaware impedes their progress, over which they fly in accumulated numbers, to spend the winter in Jersey; the soil of the latter place not being able to sustain the same degree of cultivation as the former, much food and cover for the quails consequently remain, and hither they resort until the subsequent spring. M.

Philada. June 27, 1831.

SHOOTING MATCH.

An interesting Pigeon match, for Five Hundred Dollars a side, was decided on Wednesday, June 22d, 1831, at Cornell's near Bristol, Pa. The parties were Messrs. T. P. G. and J. L., of Philadelphia, against Dr. G. W. and Mr. H. S., of New Jersey. Each person shot at twenty birds, twenty yards from the trap, and stood as follows:

	Birds.		Birds.
Mr. T. P. G.	15	Dr. G. W.	17
Mr. J. L.	19	Mr. H. S.	15
	34		32

Being won by the former party by two birds.

The Shooting was represented to have been very fine; each person shooting, in his turn, at five birds, until the twenty shots were accomplished. Mr. J. L. killed his first seventeen birds, missed the eighteenth, and killed the other two birds, making the nineteen killed.

Mr. H. S. counted only 15 birds, but 19 were killed by him, the other 4 having fallen dead out of bounds.

The Jersey gentlemen challenged the successful party to a second trial, on a future day, but the challenge was declined.

BUFFALO HUNT.

We set out on the 24th July from Lake Travers, of which we took leave with a salute of musketry; this same day the buffaloes made their appearance. My horse gave notice of their approach by the ardour with which he was animated. He was the finest horse of the party, and as I had often dismounted and walked a little to rest him, he was in the best condition, and the most spirited in this extraordinary chase.

Following the traces of Mr. Renville, who is renowned as a hunter, even among the Indians, I gave my horse the reins, and let him go in pursuit of the first buffalo we saw. I soon came up with and passed him, though he was two miles off, and having turned him, we drove him towards our people, to give them the pleasure of so new a scene, and I shot him before their eyes. At the same time, Mr. Yeffray, one of the gentlemen of Lake Travers, who was our guide, killed another at a little distance; and in the evening the driver, who carried my baggage in his wagon, brought us a third. For the first time, plenty reigned in our camp;—there was no wood, but the buffalo's dung, which lay scattered about in abundance, formed an admirable substitute. It makes an astonishingly strong fire.

The surprise I felt on a near view of this animal was equal to my pleasure in hunting it; its appearance is truly formidable. In size it approaches the elephant. Its flowing mane, and the long hair which covers its neck and head, and falls over its eyes, are like those of the lion. It has a hump like a camel, its hind quarters and tail are like those of the hippopotamus, its horns like those of the large goat of the Rocky Mountains, and its legs like those of an ox.

The following day we found the great chief encamped in this prairie, near the Sioux river, *Ciantapa-Watpa*, which serves as an outlet to the waters of Lake Travers. He was in a new and very clean tent; he offered us the tongues and humps of buffaloes, which are great delicacies, very nicely cured; but he preserved a most invincible gravity and taciturnity. Whenever we turned our eyes, we saw innumerable herds of buffaloes. I begged the major to endeavour to induce the chief to give us the sight of a buffalo hunt with bows and arrows, but he replied, with his usual complaisance, that he could not stop.

I let him go on: and Mr. Renville prevailed on the chief to satisfy my curiosity. We galloped towards a meadow which was perfectly black with them. My horse, who now regarded neither rein nor voice, plunged into the centre of the herd, dividing it into halves, and turned several of them. The chief, who followed me with Mr. Renville, let fly his arrow and shot a female buffalo; she still endeavoured to escape, but the motion of her body in running caused the arrow to sink deeper into the wound, and when she fell the whole barb had entered.

Never did I see attitudes so graceful as those of the chief. They alternately reminded me of the equestrian statue of Marcus Aurelius on the capitol at Naples, and that of the great Numidian king. Altogether it was the most astonishing spectacle I ever saw. I thought I beheld the games and combats of the ancients. I played nearly the same part as the Indians of former ages, who thought the first European they saw on horseback was a being of a superior order; while the chief with his quiver, his horse, and his victim, formed a group worthy the pencil of Raphael or the chisel of Canova. I was so enchanted by this living model of classical beauty, that I forgot my part in the chase, and was only aroused to a recollection of it by the voice of the chief, who pointed to a young buffalo, which I fired at and killed. His majesty did me the honour to say I was an excellent shot. Any of our *grands veneurs* who should receive such a compliment from one of our kings, would be immortalized, and the court poets would dispute the honour of celebrating his glories. Mr. Renville killed a buffalo.

Wolves also appeared on the scene, and formed very curious episodes, intimately connected with the principal action, according to all the rules of the Epopea.

These animals are as fond of the delicious flesh of the buffalo as man; but as they are too weak to attack, they employ cunning to entrap him. Wherever they see hunters, they immediately follow in their track, and take whatever advantage circumstances may chance to afford. Sometimes they regale themselves upon the offal which is left on the field; sometimes they follow those which they see have been wounded, and which the hunters do not go in pursuit of; on this occasion they showed quite a new contrivance. Three of them joined our charge upon the great herd, and at the moment the females were so occupied in making their own escape that they could not defend their young ones, each wolf seized upon a calf, strangled it, and dragged it off the field: when we had got to a little distance they returned and regaled themselves with their prey. When they are pressed by hunger, and no hunters come to their aid, they have recourse to another stratagem still more surprising. They approach five or six of a herd without appearing to have any design of attacking them. The buffaloes, who do not condescend to be afraid, pay no attention to them whatever—they neither avoid nor attack them. The wolves then single out their victim, which is always a female, as the most delicious food, and invariably the fattest of the herd. Whilst two or three keep her attention engaged in front by pretending to play with her, one of the strongest and most active seizes her behind by the teats, and when she turns round to drive him off, those in front fly at her throat and strangle her.—*Beltrami.*

from Nature and on Stone by T. Doughty

GROUND SQUIRREL.

J. & J. Inman Pr.

GROUND SQUIRREL.

SCIURUS (TAMIAS) LYSTERI.

[Plate XV.]

Sciurus Lysteri.—Ray, *Synops. Quad.* 216.—*Sciurus Striatus.* Klein, *Pall. Glires*, 378.—Gmel. *Schreb. tab.* 221.—*Sciurus Carolinensis*, Briss. *Reg. An.* 155. *No.* 9.—*Ecureuil Suisse.*—Desm. 339, 5 *p.* 547.—*Escurieux Suisses.*—*Sagard-Theodat, Canada, P.* 746. *Ground Squirrel*, Lawson, *Carolina, P.* 124.—*Catesby*, Carol. *Vol.* 2. *p.* 75.—Edwards, *Vol.* 4, *t.* 181. Kalm, *Vol.* 1. *p.* 322. *t. i.*—Godman, *Vol.* 2. *p.* 142. *Striped Dormouse*, Pennant.—*Arct. Zool. Vol.* 1. *p.* 126.—Hackee, *United States.*—J. Doughty's *Collection.*

The beautiful little animal whose biography and description we are about relating, is known to most of the inabitants of the United States, being found in all districts of the country, as far north as the 50th parallel; its chief habitation, however, appears to be in the vicinage of man, although numbers may be seen on the shores of Lakes Huron and Superior. It is the first wild animal which attracts the notice of infancy, who grow to manhood with so intimate an acquaintance with it, that it is unnoticed either for its beauty, or interesting habits, because familiarity has made it common; but in a minute investigation of its habits and properties, its beauties are more fully developed, and a close investigation of its foresight, and apparent wisdom, will lead us to admire an animal from which important instruction may be derived.

Associated with the Ground Squirrel, are many pleasing little reminiscenses, it recalls the mature mind to days of boyhood, when that period was often wasted in the idle enjoyment of persecuting this common inhabitant of the wood, when hours and days were spent in almost fruitless exertion to make it prisoner, when the country schoolboy exhausted his truant hours, in more severe labour by chasing from fence to fence, or from tree to tree, this active animal—than days of study would create, and when the rambles by the brook's margin, or through the lonely wood, were mostly enlivened by the spirited chirping of the Ground Squirrel.

Often, too, in the solitary wilds of our country, where nature appears almost forsaken of animated life, does the traveller find a companion in this pretty Squirrel, while it is passing swiftly from stone to stone, or scudding along the fences by the road side. These fences, which are commonly the ziz-zag or worm fences, afford them fine shelter from their enemies, and a secure and regular path for their fleetness.

The favourite places of resort for the Ground Squirrel are woods embedded with rocks and stones, the margin of shaded brooks or creeks, along fences, old walls, and banks adjacent to forests. They live in the ground, and their burrows, are mostly at the foot of stumps or trees, and beside rocks, extending to a considerable distance beneath the surface, having several branches from the principal passage, each of which is terminated by a store-house for their winter supplies; and, as they feed on the various kinds of nuts, the products of our forests, they deposit each in a separate cell, accumulating, through the summer and autumn, a most incredible quantity of provisions for the emergencies of winter. This provident store is never impaired, until the severities of the climate confines them to their burrows. During the summer season, they eat corn, wheat, rye, cherry-stones, acorns, &c. Their favourite food, however, is chesnuts, and in forests where these trees abound, numbers of these animals may always be found. Their burrows frequently possess two entrances, to afford them either a more easy access to their cells, or to escape more readily from their enemies.

These animals are seldom seen on trees, unless driven there for refuge, but may be found at all hours of the day, during the warm weather, sitting on the summit of some rock, stump, or fence, in a manner as represented in the plate, where, if unmolested, they will remain for hours, whistling and chattering away the tedium of a summer's day, making so much noise as to be heard from the most remote recess of the wood. Should they be intruded on at this period, their noise will cease, and after a short pause, watching the progress of the intruder, they will glide rapidly into their holes, with a shrill cry or whistle peculiar to this action. They are timid animals, and seldom wander far from their burrows, except in search of food, and, as the early morning and late evening are devoted to this purpose, it requires much wariness in the pursuer to surprise them, and if successful in doing this, they will then ascend the nearest trees, which, if somewhat detached from other trees, they are frequently captured. They are considered the most untameable of their species, and can seldom be reduced to familiarity, but will generally bite their keeper, and survive only a short time, if imprisoned.

These Squirrels never migrate, but, if undisturbed, keep possession of the same tenements, year after year during the short period of their existence, and in the first open weather of spring, they disincumber their habitations of all rubbish, preparatory to gathering in the harvest for the next winter; then may found at the mouths of their burrows, the shells of hickory, beach, and chesnuts, acorns,

cherry-stones, &c. these, as had been before stated, form their principal food, and while it lasts, they will not forsake their burrows, unless by protracted cold weather, they completely exhaust their store of provisions, and are of necessity compelled to leave their habitations to seek further supplies, in which case they resort to granaries and barns, and, if possible, to places where fruits have been stored. Something remarkable in the character of these Squirrels is their large cheeks, which are capable of being distended to a considerable extent, and in which they carry their food to their habitations; differing in this respect from most other Squirrels; they are classed by some with the subgenus *Tamias*. A celebrated writer observes, that "during harvest they fill their mouths so full with corn that their cheeks are quite distended, and in this manner, carry it to their concealed store. They give great preference to certain kinds of food; and, if, after filling their mouths with rye, they chance to meet with wheat, they discharge the one that they may secure the other."

The Ground Squirrel is about six inches in length from the nose to the root of the tail, which is about three and a half inches long. The general colour of the head and upper parts of the body is reddish brown; all the hairs on these parts being grey at the base. The eye-lids are whitish, and from the external angles of each eye a dark line towards the nose and ears, while on each cheek there is a reddish brown line. The short, rounded ears are covered with fine hairs, which are on their outside of a reddish brown colour, and within of a whitish gray, the upper part of the neck, shoulders, and base of the hair on the back, are of a grey brown, mingled with whitish. On the back there are five longitudinal black bands, which are at their posterior parts bordered slightly with red. The middle one begins at the back of the head, the two lateral ones on the shoulders; they all terminate at the rump, whose colour is red. On each side two white separate the lateral black bands. The lower part of the flanks and sides of the neck are of a paler red; the exterior of the fore-feet is of a greyish yellow, the thighs and hind-feet are red above. The fur, covering the throat, chin, belly, and inner surface of the extremities, is longer and thinner than that on the dorsal aspect, and is white throughout its whole length. There is no defined line of separation betwixt the colours of the back and belly. The tail is not bushy, and is brown for a small space at its root, afterwards greyish approaching to black on its upper surface, the black hairs predominating over the whitish ones, underneath it is reddish brown with a margin of hoary black. Eyes large and black, ears ovate, rounded and erect, whiskers long, fine, and of a black colour. There are also several long black hairs springing upwards from the eye-brows. The fore-feet have four toes, and an imperfect thumb, the palm is marked with five tubercles, three of which are situated at the root of the toes, and two larger ones behind, on the inner side of one of these there is a minute wart in place of a thumb, entirely covered by a thin, roundish nail; the claws are curved, compressed and sharp pointed, convex above and channelled underneath. There are five toes on the hind feet; the three middle ones nearly of equal length, the outer and inner ones shorter; the hind part of the soles hairy.

PICTURED ROCKS OF LAKE SUPERIOR.

Just before sun-down, we described something on the main opposite Grand island, and near the point of the *Detour*. On approaching it, it turned out to be one of those formations which are so common on these shores. It was a perfect vase. Mr. Lewis took an exact sketch of it. Its base is in yellow sand stone, which is six feet above the water of the lake. It stands about two miles west of the point opposite the south-western side of Grand island. The colour of the vase is nearly that of white sand stone, a little shaded in places with yellow. Its stem is about five feet high, and the body of the vase about twelve feet, with dimensions in all respects exactly adapted to these elevations. The trees that rise out of it are the fir, and their height is about ten feet. Evergreen and the aspen form the back ground.

The sun was down when we arrived at Grand island. We made several attempts to land on the main, but found no good encamping place. Our company were yet behind. We continued on. The moon shone brightly, and the surface of the water was undisturbed and pure, except by the motion imparted to it by our canoe.

> "Blue were the waters—blue the sky,
> Spreads like an ocean hung on high,
> Bespangled with those isles of light,
> So wildly spiritually bright."

Lewis, whose voice is fine, added additional enchantment to the scene by singing some of his favourite airs.

We had thoughts of proceeding on to the point of Grand island, where we had breakfasted on our way up, but by the light of the moon we saw a beautiful encamping place on the island, about four miles from it, and as it was grown late, we determined to occupy it. Our men rounded the point, and occupied one of the prettiest encamping grounds I have seen, except that on Point Ke-we-wa-na. Governor Cass and the party arrived in half an hour after, and stopped on the point, about four hundred yards from us. Guns were fired from the trading post on the main, the same we visited on going up, and found deserted, and a

fire lit upon the shore—the usual signals, and imports a welcome and a good landing, &c. Those of our party we had sent for the copper rock were there; and hearing the voyageurs in the Governor's canoe, built the fire, and fired the guns. They came over—and late as it was, we learned more, in detail, the history of their attempt, and failure, to bring away the copper rock. How much I regret this failure! Thermometer, sun-down, 68°.

Thursday, Aug. 17. *T. sun-rise,* 58°.—I was anxious to know how the morning would appear. The pictured rocks were now, at the commencement, not over six miles from us; and having procured a sketch of the vase, I was more than ever anxious to get also the outlines of those mightier formations. The morning was cloudy! The west looked black, and a wind from that quarter would have effectually destroyed all my hopes of getting the sketches of the rocks. We determined, however, to embark, and wait the result of this tempest—gathering in the west, on the south side of Grand island. Meanwhile, I examined the encamping ground. Near our tent I found the frame of a large lodge, and just back of it, the kind of frame on which the Indians dry their fish. It is built over a square hole in the ground, of about six feet by three, where the fire is built. Near the lodge was a pole of about thirty feet high. At its top hung some badges of the superstition of these people. It was an offering for their sick! From those offerings, we inferred a child had been the subject of their anxieties. Near the top of the pole is a small cap, suspended by a small string—to which is attached, also, a strip of fur. Below these is a little child's covering, not more than ten inches by twelve, with no sleeves, with a feather from the wing of a hawk suspended from near the shoulder-straps. Below, there is a piece of red and white ribband, and ten feet below all, hangs a small hoop, tied round with wattap, which confines to it a parcel of white feathers.

Now, all this is said to have been devised by their *Jossakeed,* or conjurer—or their *Maakudaywetkoouyga,* or priest; and such offerings are generally the result of some dream, or of some more systematized plan of imposing upon the credulity of these unenlightened and helpless people.

At six o'clock in the morning, we were opposite the first formation of the line of the rocky and pictured scenery. I have had some views taken that I think will be interesting. The first is an urn and a monument, with a stream of water running into the lake from between them. This stream is nearly equi-distant, between the two, but something nearer the monument. The urn is about sixty feet in circumference, and of the most exact proportions as to height and figure. Its pedestal, or base, rests upon yellow sand-stone, and not more than ten feet from the water's edge, and nearly on a line with it. The pitch of the stream is about twenty feet, and in width, it is about six feet. The monument stands about thirty feet back of a line drawn from the urn and along the margin of the lake. It is partially hid with trees. It rises out of a grove, and looks like a sacred place, and just such as we would fancy a monument would appear in. The urn and monument are distant from each other about one hundred yards.

It will not do for me to indulge in any reflections on this singular sepulchral arrangement; or to question nature as to these designs. Here is the urn, the naiad, and the monument; and art might profit by a view of their construction and arrangement. The views taken of them are in all respects correct.

I noticed in a general way the appearance of the Pictured rocks, on coming up. I shall now only refer to those parts of them which I have had sketched.

The next point which struck my observation with most force, was what I have called *Castle rock.* After Mr. Lewis had sketched this wonderful mass of singular and fortification-like arrangement, which is about three hundred feet high, and one hundred and fifty wide, which he did from some hundred yards in the lake, we approached it. We had got within about fifty feet of its base, when, on looking up, we found ourselves under the drip from its edges above—proceeding further in. I saw my men looking up, and apparently shrinking from its projecting sides. They inquired where I wished to go? I told them, into that largest opening. *"Mon Dieu!"* they exclaimed, and Mr. L. begged that we might go back. I wished to look into this opening, and did so. I confess I felt something horror struck, for in addition to the projecting walls, which are of sand-stone, and crumble at the touch, the sounds that came out of these apertures were most unearthly! One of the men got out of the canoe, and sat in a recess just in front of the opening.

This opening is about forty feet wide, and ten deep. On the right, a circular passage way winds into the body of the rock, with a roof of thirty feet, supported on pillars, averaging about twelve inches in circumference, but the length of the canoe prevented my winding my way into this inner world. After surveying this recess for half an hour, numerous fish swimming beneath us, and becoming familiarized to the danger, we came out and continued down the coast of similar formations, but all varying, for about five miles, when we came to that which I call *Cave rock.* This we approached also, and found the tops to overhang in all the threatening postures of the first. Near this, and connected with it, and on the right, is a pile of ruins, which are the remains of one of these immense formations, that having been undermined by the ac-

tion of the waters, had tumbled down, and no doubt agitated the lake for miles around.

This view, gives some ideas of the continuation of this rock-bound shore, in the sections of which the walls are formed. All along the cornice of these rocks the colour is white, and stained with brown, as if by time, and the action of the elements; and here and there huge fragments are broken off as if by the same agents. Their bases are uniformly, or nearly so, of yellow sand stone. The whole, looks like the work of art; and as if, I have before said, giants had been the workmen.

The Governor, on parting from me in the morning, bade me, very formally, farewell—said he was very sorry to leave me, but that we should meet at the Sault. There I expected myself I should have the pleasure of seeing him, and not before. I knew these sketches must occupy Mr. Lewis for some time; and so made my mind up to have a lonely voyage to the St. Mary's.

Sun-set brought us to the Grand Marais, having come sixty miles to-day. We encamped on the same spot where our tent was pitched in going up, and now, doubtless, for the last time. We are at least twenty miles behind the Governor and our party—and perhaps one hundred in advance of the military. About nine miles from the Grand Marais passed some Indians encamping for the night. Got some fish of them; and gave them in exchange pork and flour. The chief came wading into the lake, holding out his hand, saying, "*Boo-Shoo—Boo-Shoo,*"—and on receiving the pork and flour, was confounded at his unexpected good luck, and seemed grateful. Thermometer, sun-down, 66°.

The moon is at her full. The stars are nearly all quenched in her unusual splendour. The firmament looks like one vast mirror, and this lovely bay resembles it. It would be difficult, from the appearance, to determine which is the original, and which the reflection. On landing, I walked down on the bar, where, on going up, we had exercised ourselves so freely. But the evening—the varied and golden light in the west, and the full moon, silent, and silvery, and bright, and thoughts of home absorbed my reflections—and here it was I felt all the force and beauty of the following lines:—

> "The moon is up, and yet it is not night—
> Sun-set divides the day with her—a sea
> Of glory streams along the Alpine height—
> Heaven is free
> From clouds, but of all colours seem to be
> Melted to one vast Iris of the west,
> Where the day joins the past eternity.
> While on the other hand, meek Dian's crest
> Floats through the azure air.———
> A single star is at her side, and reigns
> With her o'er half the lovely heav'n; but still
> You sunny sea heaves brightly, and remains,
> Fill'd with the face of heav'n, which, from afar
> Comes down upon the waters; all its hues,
> From the rich sun-set to the rising star,
> Their magical variety diffuse:
> And now they change; a paler shadow strews
> Its mantle o'er the mountains; parting day
> Dies like the dolphin, whom each pang imbues
> With a new colour as it gasps away,
> The last still loveliest—till all is grey."—

While contemplating the stillness, and wrapt in the silvery mantle of this night-scenery, I heard a footstep—on looking round, I recognized it to be one of my men—the steersman. "Sir," said he, "I have come to say, that if it is your pleasure, now that we have eaten and rested, we are willing to go on—the night is bright, and we will make your pallet in the canoe." I assented, when the canoe was soon in the water, the tent down, the pallet that had been spread, rolled up, and in half an hour, and at ten o'clock, we were going out of this bay, and gliding over the surf of the lake as it broke upon the beach. The stillness which I had been enjoying, was broken by the chaunting of the voyageurs. I stretched myself down on my pallet, that was unrolled and spread out on the bottom of the canoe, and pulling my blankets over me, went to sleep. Thermometer, sun-rise, 58°.

Friday, August 18th.—The voyageurs have been gratified. Their object was to overtake and pass the Governor and the rest of the company whilst they slept. At half past one, the entire silence awaking me, I lifted my head, and looking out, saw five barges drawn up on the shore, and the smoke of the fires at which the company had cooked their evening repast; and at three, the provision barges, and those who had been despatched to the Ontanagon, and who also got ahead of me whilst I was delayed before the Pictured rocks, and just beyond, at Twin river, the Governor, Mr. Holliday, and Mr. Johnson. I had got into a doze again, but every thing becoming so perfectly still, I was awakened, and looking out, saw the tents, and that all was silent. We passed them all, and continued on to White-fish point, where we breakfasted. Just as we had embarked, after breakfast, we saw in the distance the little fleet. I soon discovered the determination of the voyageurs was to make the entire traverse of this immense bay, from *White-fish,* to *Gross point.* It is true, the morning was calm; but there is danger in the undertaking, and it is never attempted but under the fairest prospects. We had proceeded but about one-third of the way, when the wind breezed up, and fortunately for us, it was fair. We put our sail, and scudded before it. When two-thirds of the way across, we saw, by standing up in the canoe, the boats following—their sails just visible. We

had got within ten miles of Gross cape when the wind rose into a storm. The waves were making, fast, when the paddles were resorted to, which, together with the wind, forced us under the shelter of Gross point just in time. We feared for our company, but keeping on, and now in calmer water upon the river St. Mary, and at three o'clock, I bade, perhaps, a final farewell to Lake Superior, and its billowy and changeful surface; its moon-light scenery; its broken and barren shores; its Grand Sablés; its Pictured rocks; its islands, and its solitude. I felt grateful for the protection I had experienced, and for the safety of all concerned; and gratified at having been made able to feed the hungry, and to assist in planning measures which we hope may prove in future a source of supplies, in part, at least, for the miserable and starving beings among whom we have been.

At five o'clock arrived at the Sault de St. Marié. It was our intention to go down the rapids, but our voyageurs dissuaded us from it, assuring us that the canoe was too deep, and that none of the crew knew the way well enough to avoid, with certainty, the rocks which are no where more than a few feet beneath the surface of the foam of the rapids.

We entered by the way of the race which had been cut by the soldiers to let in the water for a saw mill, which has been destroyed by fire since we left here; and at five, P. M. had the gratification of being once more in a place where the rights of hospitality had been extended to us; and although it is only on the threshold of civilized life, so great was the change from solitude to it, that I felt on seeing these few log houses covered with bark, and the fort, and the faces of the inhabitants, as if I had entered a populous town. We were scarcely in our quarters before the landlady, Mrs. H——, announced the deaths of John Adams and Thomas Jefferson, and handed us the papers which teem with the feelings, and reflections, and honours of the people, on an occasion so unexampled!

In an hour after our arrival, the Governor and Mr. Holliday were seen careering it over the rapids, and flying by us. They were surprised on seeing us, having passed us at Grand island, and not expecting our arrival, at least, until to-morrow. *Tour to the Lakes.*

HOW SPIDERS EFFECT THEIR AERIAL EXCURSIONS.

By John Blackwell, Esq. F. L. S.

Although it is well known that spiders sometimes ascend into the atmosphere through the instrumentality of fine lines of a viscous gummy matter, which proceed from the papillæ situated at the extremity of the abdomen, yet the manner in which these aerial jonrneys are effected still remains involved in obscurity, and considerable diversity of opinion exists as to the particular species of spider by which they are undertaken. This deficiency leaves open a wide field for speculation; and accordingly we find, that natural historians have ascribed this interesting occurrence to several distinct causes,—such as the agency of winds, evaporation, and electricity; the exercise of peculiar physical powers, with which the spiders that produce gossamer have been supposed to be endowed; and the extreme levity of the webs of these insects, which are represented by some writers on the subject to be of less specific gravity than atmosphere air : but that each of these hypotheses is unfounded, and in direct opposition to facts, will be rendered evident by the following observations and experiments, from which a satisfactory solution of the difficulty, it is hoped, will be obtained.

That gossamer, which usually abounds most in the months of September and October, is perceived to ascend into the atmosphere only in serene bright weather, is, I believe, generally allowed: it is also admitted, the gossamer in the air is invariably preceded by gossamer on the ground. These, as will appear in the sequel, are circumstances of much importance in the present investigation; every method of accounting for the ascent of the webs and spiders, however plausible, which does not imply their concurrence, being necessarily erroneous.

But to proceed to my own researches:—A little before noon on the 1st of October, 1826, which was a remarkably calm sunny day, the thermometer in the shade ranging from 55°·5 to 64°, I observed that the fields and hedges in the neighbourhood of Manchester were covered over, by the united labours of an immense multitude of spiders, with a profusion of fine shining lines, intersecting one another at every angle, and forming a confused kind of net-work. So extremely numerous were these slender filaments, that in walking across a small pasture my feet and ankles were thickly coated with them: it was evident, however, notwithstanding their great abundance, that they must have been produced in a very short space of time, as early in the morning they were not sufficiently conspicuous to attract my notice; and on the 30th of September they could not have existed at all; for on my referring to my meteorological journal, I find that a strong gale from the south prevailed during the greater part of that day.

A circumstance so extraordinary could not fail to excite curiosity; but what more particularly arrested my attention was the ascent of an amazing quantity of webs of an irregular complicated structure, resembling ravelled silk of the finest quality and clearest white. They were of various

shapes and dimensions, some of the largest measuring upwards of a yard in length, and several inches in breadth in the widest part; while others were almost as broad as long, presenting an area of a few square inches only.

These webs, it was quickly perceived, were not formed in the air, as is generally believed, but at the earth's surface. The lines of which they were composed being brought into contact by the mechanical action of gentle airs, adhered together, till by continual additions they were accumulated into flakes or masses of considerable magnitude, on which the ascending current, occasioned by the rarefaction of the air contiguous to the heated ground, acted with so much force as to separate them from the objects to which they were attached, raising them in the atmosphere to a perpendicular height of at least several hundred feet. I collected a number of these webs about midday as they rose, and again in the afternoon, when the upward current had ceased and they were falling, but scarcely one in twenty contained a spider; though on minute inspection I found small winged insects; chiefly aphides, entangled in most of them.

From contemplating this unusual display of gossamer, my thoughts were naturally directed to the animals which produced it; and the countless myriads in which they swarmed almost created as much surprise as the singular occupation that engrossed them. Apparently actuated by the same impulse, all were intent upon traversing the regions of air; accordingly, after gaining the summits of various objects, as blades of grass, stubble, rails, gates, &c., by the slow and laborious process of climbing, they raised themselves still higher by straightening their limbs; and elevating the abdomen, by bringing it from the usual horizontal position into one almost perpendicular, they emitted from their spinning-apparatus a small quantity of the glutinous secretion with which they construct their webs. This viscous substance being drawn out by the ascending current of rarefied air into fine lines several feet in length, was carried upward, until the spiders feeling themselves acted upon with sufficient force in that direction, quitted their hold of the objects on which they stood, and commenced their journey by mounting aloft.

Whenever the lines became indequate to the purpose for which they were intended, by adhering to any fixed body, they were immediately detached from the spinners, and so converted into terrestrial gossamer by means of the last pair of legs, and the proceedings just described were repeated; which plainly proves that these operations result from a strong desire felt by the insects to effect an ascent. But what, it may be asked, is the exciting cause of this singular propensity. It has been suggested that hunger, or an inclination to procure some favourite kind of food, may supply the requisite stimulus. These suppositions, however, are discountenanced by the plump appearance which the animals exhibit; by their total disregard of such winged insects as happen to be placed within their power; by their utter inability to regulate their motions, while afloat, in any other manner than by letting out or drawing in the lines by which they are conveyed through the air, and thus promoting their ascent or descent; by the unsuitableness of the lines for securing their prey; and lastly, by the uncertainty when a favourite day for their purpose may occur, or even that one may occur at all.

Were I to hazard a conjecture on the subject, I should be disposed to attribute the manifest anxiety of these insects to change their quarters, to a feeling of insecurity occasioned by their proximity to one another;—the prodigious numbers which in favourable seasons are usually congregated together affording the more powerful individuals an opportunity, seldom neglected by these voracious creatures, of making an easy prey of the weaker: and this opinion is strengthened, if not confirmed, by the fact, that they are chiefly animals which have not arrived at maturity that undertake their migrations.

I have asserted, that when the spiders which produce gossamer perform their aerial journeys, they are borne upward by an ascending current of rarefied air acting on the slender lines which proceed from their spinners. I shall now endeavour to prove that this curious atmospherical phenomenon, which well deserves the attention of meteorologists, affords them the only available means of accomplishing their object; and that the hypotheses previously adverted to are quite irreconcileable with facts, and consequently must be erroneous.

It has been already stated, that gossamer is never seen floating in the air except in calm sunny weather; its buoyancy, therefore, evidently does not depend upon the agency of winds, usually so called: indeed it is probable that winds never do take an upward direction, unless influenced by some extraordinary circumstance or local peculiarity; the ascent of gossamer, on the contrary, is frequently observed to take place over a great extent of country on the same day. It was noticed on the 1st of October, for example, in England, Wales, and Ireland.

If a satisfactory explanation of this interesting fact cannot be derived from the operation of winds, it is still less likely to be deduced from the action of evaporation or electricity; for, not to insist upon the probable, I had almost said absolute, insufficiency of these powers considered as agents, experiments show that the spiders do not select those periods for making an ascent when the evaporating

force is unusually great, or the electricity of the atmosphere is remarkable for its intensity.

But though each of the alleged causes just adverted to appears incompetent to produce the required effect, yet one abundantly adequate may perhaps be found in the physical endowments of the animals themselves, or in the extreme lightness of their webs: these two last-named suppositions therefore merit a careful examination.

If the spiders do impel their lines upward by the voluntary exercise of some animal function which has hitherto eluded the researches of physiologists, it follows, that when the communication is interrupted, the lines, unless influenced by some other force, must necessarily fall. Now the reverse of this uniformly ensues: for if the insects, after having commenced their ascent, are suddenly separated from the lines to which they are attached, the latter still continue to ascend, their motion being accelerated by their diminished gravity, but the former are rapidly precipitated to the ground. The conclusion is obvious. The buoyancy of the lines cannot be occasioned by the beings which produce them; and the ascent of large flakes of web unoccupied by spiders, before alluded to, confirms this opinion.

Perhaps the buoyance of lines from which spiders have been detached, and of webs although destitute of these insects, may be regarded as facts powerfully contributing to establish the idea that this animal secretion is specifically lighter than the mixed gases which compose the atmosphere. The fallacy of this notion, however, is easily proved by experiment. In the comparatively still air of a room without fire, both the lines and webs descend slowly to the floor, the latter falling with the greater degree of velocity.

Were these productions lighter than atmospheric air, or were the spiders capable of effecting an ascent without the help of adventitious aid, a calm though cloudy day might answer their purpose; but as considerable warmth is required to produce an ascending current of rarefied air strong enough to bear them from the earth, a bright as well as still day is indispensable.

Founded on results obtained from an experiment which has been frequently made, but never conducted with sufficient care, is the belief entertained by many eminent entomologists that spiders can forcibly propel or dart out threads from their papillæ. Now as this process would, contrary to my own experience, imply the exercise of a physical power peculiar to these creatures, and as attempts have been made to explain on this principle the fabrication of their webs in situations where their ordinary mode of proceeding could not be employed, I determined to repeat the experiment from which so strange a conclusion has been deduced. With this view, having procured a small branched twig, I fixed it upright in an earthen vessel containing water, its base being immersed in the liquid, and upon it I placed several of the spiders which produce gossamer. Whenever the insects thus circumstanced were exposed to a current of air, either naturally or artificially produced, they directly turned the thorax towards the quarter whence it came, even when it was so slight as scarcely to be perceptible, and elevating the abdomen, they emitted from their spinners a small portion of glutinous matter, which was instantly carried out in a line, consisting of four finer ones, with a velocity equal, or nearly so, to that with which the air moved, as was apparent from observations made on the motion of detached lines similarly exposed. The spiders, in the next place, carefully ascertained whether their lines had become firmly attached to any object or not, by pulling at them with the first pair of legs; and if the result was satisfactory, after tightening them sufficiently they made them fast to the twigs; then discharging from their spinners, which they applied to the spot where they stood, a little more of their liquid gum, and committing themselves to these bridges of their own constructing, they passed over them in safety, drawing a second line after them as a security in case the first gave way, and so effected their escape.

Such was invariably the result when the spiders were placed where the air was liable to be sensibly agitated: I resolved therefore to put a bell-glass over them; and in this situation they remained seventeen days, evidently unable to produce a single line by which they could quit the branch they occupied without encountering the water at its base; though on the removal of the glass they regained their liberty with as much celerity as in the instances already recorded.

This experiment, which from a want of due precaution in its management has misled so many distinguished naturalists, I have tried with several of the geometric spiders, and always with the same success. Placed under the bell-glass, or in any close vessel, they in vain endeavoured to make their escape from the branch to which they were confined, but in the disturbed air of an inhabited room they readily accomplished their object.

Instances of long-sustained abstinence from food by insects of the genus *Aranea*, unaccompanied by any manifest diminution of vital energy, have been given by various observers. In adding another case to the list it is proper to remark, that it must be received solely on my own authority.

Some of the spiders which produce gossamer were procured on the 2d of October, and inclosed in glass phials with ground stoppers, where they were suffered to remain till the 16th of December, an interval of seventy-five days, without either food or moisture; yet at the expiration of that period,

the only alterations perceptible in their external condition were a small decrease in bulk, and a slightly wrinkled appearance, particularly of the abdomen: but their functions were seemingly unimpaired; for on warm days, or when excited by artificial heat, they were lively in their motions, and to the last continued to produce their threads, which were often destroyed for the purpose of ascertaining whether they would be replaced by others with apparently the same facility as at the time of their capture.

It is particularly deserving of notice, that these insects, though unable to climb up the smooth perpendicular sides of the phials on their first introduction, soon contrived to traverse the interior of their prisons in every direction.

In order to illustrate their manner of proceeding on this occasion, the case of an individual has been selected for description,—the same method, with a few trivial modifications, being pursued by all. Elevating the abdomen, and pressing the spinning-apparatus against the side of the phial, this spider emitted from its papillæ a little viscous fluid, which on exposure to the air hardened into a minute semi-transparent speck; then moving to a short distance, and drawing out a thread after it, one end of which remained fixed to the spot it had connected this filament with another part of the phial by applying the spinners as before. Several lines being thus produced, the spider speedily raising itself upon them above the bottom of the phial, promoted its undertaking by repeating the process just described; every step so gained enabling it to carry its operations still higher.

From the cylindrical figure of the phial, it follows that all the lines attached to its sides by their extremities, such as were vertical alone excepted, formed with those sides chords to arcs of various magnitudes. Lowering itself from one of these chords to another, and applying the spinners to each in succession, the spider soon connected the whole of them together by a line; then ascending again to the greatest altitude it could attain, and dropping down by a thread to the bottom of the phial, over which it walked to the opposite side; it there drew the thread tight and made it fast, having prevented it from coming in contact with the glass previously by raising the abdomen a little. To this oblique line it united others, extending them in different directions, till by these means it established a communication with every part of the phial. As there was some difficulty in tracing these operations with the unassisted eye, lenses of the magnifying powers of six and eight were employed.

The spiders seen ascending into the atmosphere on the 1st of October were of two distinct species; but as the technical difference of insects has engaged only a small share of my attention, I shall leave the task of identifying them to those who are more familar than myself with this branch of entomology. The subjoined remarks on some of the characteristics of these insects, which are more conveniently illustrated by the pen than the pencil, may serve to facilitate this object.

One species has four of its eight eyes much larger than the other four. Two pairs situated in the front or fore-part of the head are arranged thus °..°, the relative size of the dots being nearly the same as that of the eyes. The other pair of small ones is placed in the upper part of the head, and on each side of it one of the remaining pair of large eyes is seated. The spider has the abdomen rather depressed; the anterior limbs, which it raises in a menacing manner when any thing approaches it, are longer than the posterior ones; and it moves in a lateral direction with almost as much ease and expedition as it does straight forward. The largest individuals of this species observed to be conveyed through the atmosphere by a current of air acting upon their lines, measured one-sixth of an inch between the extreme points of the head and abdomen; one-tenth of an inch across the broadest part of the abdomen; and weighed about a quarter of a grain.

The second species has also four eyes of a greater magnitude than the other four. The arrangement and relative size of three pair placed in the fore-part of the head may be thus expressed by dots :..: ; one of the other pair of large eyes being situated on each side of the head. Spiders of this species have the last pair of legs longer than the first, and move with great celerity, but rarely in a lateral direction. They vary considerably in colour, some being of a much darker hue than others, and these are frequently without the pale longitudinal line which extends the whole length of the thorax, and sometimes even on to the abdomen of the lighter-coloured specimens. The largest individuals seen floating in the air were somewhat inferior in weight and dimensions to the largest of the preceding species observed under similar circumstances*.

Trans. Linn. Soc.

* Is this the *Aranea dorsalis* of the *Systema Naturæ*, Gmelin's Edit.?

FOUNTAIN TREES.

The Fountain Trees are very extraordinary vegetables, growing in one of the Canary Islands, and likewise said to exist in some other places. Of these remarkable trees, we have the following account in Glasse's History of the Canary Islands: "There are only three fountains of water in the whole island of Hiero, where the Fountain Tree grows. The great cattle are watered at those fountains, and at a place where water distils from the leaves of

a tree. Many writers have made mention of this famous tree, some in such a manner as to make it appear miraculous; others again positively deny its existence; among whom is Feyjoo, a modern Spanish critic. But he, and those who agree with him in this matter, are as much mistaken, as those who would make it appear miraculous.

"The author of the 'History of the Discovery and Conquest of the Canaries,' has given a particular account of this remarkable vegetable, which I shall here insert at large: The district in which this tree stands, is called *Tigulahe;* near to which, and in the steep rocky ascent that surrounds the whole island, there is a narrow gutter, commencing at the sea, and continuing to the summit of the cliff, where it is joined with a valley that is terminated by the steep front of a rock. On the top of this rock grows a tree, called in the language of the ancient inhabitants, *garse,* or 'sacred tree,' which for many years has been preserved sound, fresh, and entire. Its leaves constantly distil such a quantity of water, as is sufficient to furnish drink to every living creature in Hiero; nature having provided this remedy for the drought of the island. Nobody knows of what species this tree is, only that it is called *till,* and stands by itself at the distance of a league and a half from the sea. The circumference is about twelve spans, the diameter four, and its height from the ground to the top of the highest branch forty spans. The branches are thick and extended; the lowest commence about an ell from the ground; and the circumference of the whole of them is about a hundred and twenty feet. The fruit resembles an acorn, and tastes somewhat like the kernel of a pine-apple, but is softer and more aromatic. The leaves appear like those of the laurel, but are larger, wider, and more curved: they come forth in a perpetual succession, so that the tree always remains green.

"On the north side of this tree are two large tanks, or cisterns, of rough stone; or rather, one cistern divided, each half being twenty feet square, and sixteen spans in breadth. One of these contains water for the drinking of the inhabitants; and the other that which they use for their cattle and domestic purposes.

"Every morning, near this part of the island, a cloud or mist rises from the sea, which the south and east winds force against the above-mentioned steep cliff; so that the cloud having no vent but by the gutter, gradually ascends it, and from thence advances slowly to the extremity of the valley, where it is checked by the front of the rock which terminates the valley. It then rests upon the thick leaves and wide spreading branches of the tree, from whence it distils in drops during the remainder of the day, until it is at length exhausted; in the same manner that we see water drip from the leaves of trees after a heavy shower of rain. This distillation is not peculiar to the *garse* or *till,* for some bresos which grow near it, also drop water; but their leaves being few and narrow, the quantity is so trifling, that though the natives catch some of it, yet they make little account of any but what distils from the garse; which, together with the water of some fountains, and what is saved in the winter season, is sufficient to serve them and their flocks. The tree yields most water in those years when the easterly winds have prevailed for a continuance; for, by these winds only, the clouds, or mists, are drawn hither from the sea.

"A person lives on the spot near which this curious tree grows, who is appointed to take care of it and its water, and is allowed a house to live in, together with a certain salary. He every day distributes to each family in the district, seven pots of water, besides what he gives to the principal people of the island."

Whether the tree which yields water at the present time, be the same as that mentioned in the above description, we cannot determine; but it is probable there has been a succession of them; for Pliny, describing the Fortunate Islands, says, "In the mountains of Ambrion are trees resembling the plant ferula, from which water may be procured by pressure. What comes from the black kind is bitter, but that which the white yields is sweet and potable."

Trees yielding water, however, are "not peculiar to the island of Hiero; for travellers inform us of one of the same kind on the island of St. Thomas, in the Gulf of Guinea; and in "Cockburn's Voyages," we find the following account of a dropping tree, near the mountains of Fera Paz, in America:—

"On the morning of the fourth day, we came out on a large plain, in the middle of which stood a tree of unusual size, spreading its branches over a vast compass of ground. Curiosity led us up to it. We had perceived at some distance, the ground about it to be wet, at which we were rather surprised, as well knowing there had no rain fallen for near six months past, according to the certain course of the season in that latitude; and that it was impossible to be occasioned by a fall of dew, we were convinced by the sun's having power to exhale all moisture of that nature a few minutes after its rising. At length, to our great amazement, we saw water dropping, or, as it were distilling, pretty fast from the end of every leaf of this tree, which might not improperly be termed *miraculous;* at least it was so with respect to us, who had been labouring four days through extreme heat, without receiving the least moisture, and were now almost expiring for want of it. We could not help looking on this as water sent from heaven to comfort us under great extremity, and, having

caught what we could of it in our hands, we liked it so well, that we could hardly prevail with ourselves to give over drinking.

"A matter of this nature could not but incite us to make the strictest observations concerning it; and, accordingly, we staid under the tree about three hours, and found that we could not fathom its body in five times. We observed the soil where it grew to be very strong; and, upon the nicest inquiry we could afterwards make, both of the natives of the country and the Spanish inhabitants, we could not learn that there was any tree of a similar nature throughout New Spain, nor perhaps all America over. I do not, however, relate this as a prodigy in nature; because, though I am not philosopher enough to ascribe any natural cause for it, the learned may perhaps be able to give substantial reasons, for what to us appeared a great and marvellous secret." *Hutton.*

PRECIPITATION OF SALT IN THE MEDITERRANEAN.

It is well known, that a powerful current sets constantly from the Atlantic into the Mediterranean, and its influence extends along the whole southern borders of that sea, and even to the shores of Asia Minor. Captain Smyth found, during his survey, that the central current ran constantly at the rate of from three to six miles an hour, eastward, into the Mediterranean, the body of water being three miles and a half wide. But there are also two lateral currents—one on the European, and one on the African side; each of them about two miles and a half broad, and flowing at about the same rate as the central stream. These lateral currents ebb and flow with the tide, setting alternately into the Mediterranean and into the Atlantic. The escape of the great body of water, which is constantly flowing in, has usually been accounted for by evaporation, which must be very rapid and copious in the Mediterranean; for the winds blowing from the shores of Africa are hot and dry, and hygrometrical experiments recently made in Malta and other places, show that the mean quantity of moisture in the air, investing the Mediterranean, is equal only to one half of that in the atmosphere of England. It is, however, objected, that evaporation carries away only fresh water, and that the current is continually bringing in salt water: why, then do not the component parts of the waters of the Mediterranean vary? or, why do they remain apparently the same as those of the ocean? Some have imagined that the excess of salt might be carried away by an under-current, running in a contrary direction to the superior; and this hypothesis appeared to receive confirmation from a late discovery that the water taken up about fifty miles within the Straits, from a depth of six hundred and seventy fathoms, contained a quantity of salt *four times greater* than the water of the surface. Dr. Wollaston, who analysed the water obtained by Captain Smyth, truly inferred that an under-current of such denser water, flowing outward, if of equal breadth and depth with the current near the surface, would carry out as much salt below as is brought in above, although it moved with less than one-fourth part of the velocity, and would thus prevent a perpetual increase of saltness in the Mediterranean beyond that existing in the Atlantic. It was also remarked by others, that the result would be the same, if, the swiftness being equal, the inferior current had only a fourth of the volume of the superior. At the same time there appeared reason to conclude that this great specific gravity was only acquired by water at immense depths; for two specimens of the water taken at the distance of some hundred miles from the Straits, and at depths of four hundred, and even four hundred and fifty fathoms, were found by Dr. Wollaston not to exceed in density that of many ordinary samples of sea-water. Such being the case, we can now prove, that the vast amount of salt brought into the Mediterranean, *does not* pass out again by the Straits. For it appears, by Captain Smyth's soundings, which Dr. Wollaston had not seen, that between the capes of Trafalgar and Spartel, which are twenty-two miles apart, and where the Straits are shallowest, the deepest part, which is on the side of Cape Spartel is only *two hundred and twenty fathoms.* It is, therefore, evident, that if water sinks in certain parts of the Mediterranean, in consequence of the increase of its specific gravity, to greater depths than two hundred and twenty fathoms, it can never flow out again into the Atlantic, since it must be stopped by the submarine barrier which crosses the narrowest part of the Straits of Gibraltar.

What, then, becomes of the excess of salt?—for this is an inquiry of the highest geological interest. The Rhone, the Po, and many hundred minor streams and springs, pour annually into the Mediterranean, large quantities of carbonate of lime, together with iron, magnesia, silicia, alumina, sulphur, and other mineral ingredients, in a state of chemical solution. To explain why the influx of this matter does not alter the composition of this sea has never been thought to present a great difficulty; for it is known that calcareous rocks are forming in the delta of the Rhone, in the Adriatic, on the Coast of Asia Minor, and in other localities. Precipitation is acknowledged to be the means whereby the surplus mineral matter is disposed of, after the consumption of a certain portion in the secretions of testacea and zoophytes. But some have imagined that, before muriate of soda can, in like manner, be precipitated, the whole Me-

diterranean ought to become as much saturated with salt as the brine-springs of Cheshire, or Lake Aral, or the Dead Sea. There is, however, an essential difference between these cases; for the Mediterranean is not only incomparably greater in extent than the two last-mentioned basins, but its depth is enormous. In the narrowest parts of the Straits of Gibraltar, where they are about nine miles broad between the Isle of Tariffa and Alcanzar Point, the depth varies from one hundred and sixty to five hundred fathoms; but between Gibraltar and Ceuta, Captain Smyth sounded to the extraordinary depth of *nine hundred and fifty fathoms!* where he found a gravelly bottom, with fragments of broken shells. Saussure sounded to the depth of two thousand feet, within a few yards of the shore, at Nice. What profundity, then, may we not expect some of the central abysses of this sea to reach! The evaporation being, as we before stated, very rapid, the surface water becomes impregnated with a slight excess of salt; and its specific gravity being thus increased, it instantly falls to the bottom, while lighter water rises to the top, or that introduced by rivers, and by the current from the Atlantic, flows over it. But the heavier fluid does not merely fall to the bottom, but flows on till it reaches the lowest part of one of those submarine basins into which we must suppose the bottom of this inland sea to be divided. By the continuance of this process, additional supplies of brine are annually carried to deep repositories, until the lower strata of water are fully saturated, and precipitation takes place—not in thin films such are said to cover the alluvial marshes along the western shores of the Euxine, not in minute layers, like those of the salt "étangs" of the Rhone, but on the grandest scale —continuous masses of pure rock-salt, extending, perhaps, for hundreds of miles in length, like those in the mountains of Poland, Hungary, Transylvania, and Spain.*

The Straits of Gibraltar are said to become gradually wider by the wearing down of the cliffs on each side at many points; and the current sets along the coast of Africa so as to cause considerable inroads in various parts, particularly near Carthage. Near the Canopic mouth of the Nile, at Aboukir, the coast was greatly devastated in the year 1784, when a small island was nearly consumed. By a series of similar operations, the old site of the cities of Nicopolis, Taposiris, Parva, and Canopus, have become a sandbank.

Lyell's Geology.

* As to the existence of an inferior current flowing westward, none of the experiments made in the late survey, give any countenance whatever to this popular notion; and it seems most unnecessary to resort to it, not only because the expenditure of the Mediterranean, by evaporation, must be immense, but because it is not yet proved that the two lateral currents, which conjointly exceed in breadth that of the centre, do not restore the equilibrium, if occasionally disturbed. They ebb and flow with the tide, but they may carry more water to the west than to the east. The opinion, that in the middle of the Straits the water returned into the Atlantic by a submarine counter-current, first originated in the following circumstance. M. Du l'Aigle, commander of a privateer called the Phœnix, of Marseilles, gave chase to a Dutch merchant ship, near Ceuta Point, and came up with her in the middle of the gut, between Tariffa and Tangier, and there gave her one broadside, which directly sunk her. A few days after, the sunk ship, with her cargo of brandy and oil, arose on the shore near Tangier, which is at least four leagues to the westward of the place where she sunk, and directly against the strength of the *central* current.—Phil. Trans., 1724. It seems obvious, that the ship, in this case, was brought back by one of the *lateral* currents, not by an *under* current.

ŒSTRUS EQUI, OR THE HORSE GAD FLY.

When the female of this species has been impregnated, and the eggs are sufficiently mature, she seeks among the horses a subject for her purpose; and approaching it on the wing, she holds her body nearly upright in the air, and her tail, which is lengthened for the purpose, curved inwards and upwards: in this way she approaches the part where she designs to deposit her egg; and, suspending herself for a few seconds before it, suddenly darts upon it, and leaves her egg adhering to the hair: she hardly appears to settle, but merely touches the hair with the egg held out on the projecting point of the abdomen. The egg is made to adhere by means of a glutinous liquid secreted with it. She then leaves the horse at a small distance, and prepares a second egg, and, poising herself before the part, deposits it in the same way. The liquor dries, and the egg becomes firmly glued to the hair: this is repeated by various flies, till four or five hundred eggs are sometimes placed on one horse. The horses, when they become used to this fly, and find that it does them no injury, as the Tabani and Conopes, by sucking their blood, hardly regard it, and do not appear at all aware of its insidious object. The skin of the horse is always thrown into a tremulous motion on the touch of this insect, which merely arises from the very great irritability of the skin and cutaneous muscles at this season of the year, occasioned by the continual teasing of the flies, till at length these muscles act involuntarily on the slightest touch of any body whatever.

"The inside of the knee is the part on which these flies are most fond of depositing their eggs, and the next to this, on the side and back part of the shoulder, and, less frequently, on the extreme ends of the mane. But it is a fact worthy of attention, that the fly does not place them promiscuously about the body, but constantly on those parts which are most liable to be licked with the tongue; and the ova, therefore, are always scrupulously placed within its reach.

"The eggs thus deposited I at first supposed were loosened from the hairs by the moisture of the tongue, aided by its roughness, and were conveyed to the stomach, where they were hatched: but on more minute search I do not find this to be the case, or at least only by accident; for, when

they have remained on the hairs four or five days they become ripe, after which time the slighest application of warmth and moisture is sufficient to bring forth, in an instant, the latent larva. At this time, if the tongue of the horse touches the egg, its operculum is thrown open, and a small active worm is produced, which readily adheres to the moist surface of the tongue, and is from thence conveyed with the food to the stomach. If the egg itself be taken up by accident, it may pass on to the intestinal canal before it hatches; in which case its existence to the full is more precarious, and certainly not so agreeable, as it is exposed to the bitterness of the bile.

"I have often, with a pair of scissars, clipped off some hairs with eggs on them from the horse, and on placing them in the hand, moistened with saliva, they have hatched in a few seconds. At other times, when not perfectly ripe, the larva would not appear, though held in the hand under the same circumstances for several hours; a sufficient proof that the eggs themselves are not conveyed to the stomach. It is fortunate for the animal infested by these insects, that their numbers are limited by the hazards they are exposed to. I should suspect near a hundred are lost for one that arrives at the perfect state of a fly. The eggs, in the first place, when ripe, often hatch of themselves, and the larva, without a nidus, crawls about till it dies; others are washed off by water, or are hatched by the sun and moisture thus supplied together. When in the mouth of the animal they have the dreadful ordeal of the teeth and mastication to pass through. On their arrival at the stomach, they may pass mixed with the mass of food into the intestines; and when full grown, in dropping from the animal to the ground, a dirty road or water may receive them. If on the commons, they are in danger of being crushed to death, or of being picked up by the birds who constantly attend the footsteps of the cattle for food. Such are the contingencies by which nature has wisely prevented the too great increase of their numbers, and the total destruction of the animals they feed on.

"I have once seen the larva of this œstrus in the stomach of an ass; indeed there is little reason to doubt their existence in the stomachs of all this tribe of animals. These larva attach themselves to every part of the stomach, but are generally more numerous about the pylorus, and are sometimes, though much less frequently, found in the intestines. Their numbers in the stomach are very various, often not more than half a dozen, at other times more than a hundred; and, if some accounts might be relied on, even a much greater number than this. They hang most commonly in clusters, being fixed by the small end to the inner membrane of the stomach, which they adhere to by means of two small hooks, or tentacula. When they are removed from the stomach they will attach themselves to any loose membrane, and even to the skin of the hand. The body of the larva is composed of eleven segments, all of which, except the two last, are surrounded by a double row of horny bristles, directed towards the truncated end, and are of a reddish colour, except the points, which are black. The larvæ evidently receive their food at the small end, by a longitudinal aperture, which is situated between two hooks, or tentacula. Their food is probably the chyle, which being nearly pure aliment, may go wholly to the composition of their bodies, without any excrementitious residue, though on dissection the intestine is found to contain a yellow or greenish matter, which is derived from the colour of food, and shows that the chyle, as they receive it, is not perfectly pure. They attain their full growth about the latter end of May, and they are coming from the horse from this time to the latter end of June, or sometimes later. On dropping to the ground they find out some convenient retreat, and change to the chrysalis; and in about six or seven weeks the fly appears.

"The perfect fly but ill sustains the changes of weather; and cold and moisture, in any considerable degree, would probably be fatal to it. The flies never pursue the horse into the water. This aversion I imagine arises from the chilliness of that element, which is probably felt more exquisitely by them, from the high temperature they had been exposed to during their larva state. The heat of the stomach of the horse is much greater than that of the warmest climate being about 102 degrees of Farenheit, and in their fly state they are only exposed to 60, and from that to about 80 degrees. This change, if suddenly applied, would in all probability be fatal to them; but they are prepared for it by suffering its first effects in the quiescent and less sensible state of a chrysalis. I have often seen this fly, during the night time, and in cold weather, fold itself up with the head and tail nearly in contact, and lying apparently in a torpid state through the middle of summer." *Nicholson.*

FRESH AND SALT LAKE OF MEXICO.

THERE is no lake in the world, we know of, like this: a part of its water is fresh, and the other salt; which gives room to think that there are two sources, though but one lake appears.

The fresh water seems stagnant and motionless, and the salt water ebbs and flows as the sea, with this difference, that it does not follow the rule of tides, being only produced by the blowing of winds, which sometimes makes this lake as tempestuous as the sea.

The fresh water of this lake is good and wholesome, and affords plenty of small fish; it is higher than the salt water, and falls into it; the part of the lake that ebbs and flows is brackish, and has no sort of fish.

[illegible] by T. Doughty

SWANS.

from Child's & Inman's Press

WILD SWAN.

CYGNUS FERUS.

[Plate XVI.]

(By JOHN T. SHARPLESS, M. D.)

Anas cygnus ferus, LINN.—*Cygnus ferus*, BRISS.—*Le Cygne sauvage*, BUFF.—*Elk, or Hooper Swan*, RAY *Whistling Swan*, LATH. PENNANT.—*Cygnus musicus*, BECHST.—*Swan*, WILSON'S LIST.—*Wapa-Seu*, INDIANS HUD. BAY.—J. DOUGHTY'S *Collection*.

THE Swan has been emphatically called the peaceful monarch of the Lake. It is undoubtedly the most beautiful of all the water-birds, whether we consider the spotless purity of its plumage, the gracefulness of its contour, or the majesty of its movements. It is in its own element alone, that it can display its charms, being extremely awkward and inelegant in all its motions when placed on its feet, but when seen peacefully engaged in the excitement of play, or calmly dressing its stainless garb in the lovely mirror on which it floats, it is one of the most agreeable and untiring ornaments in nature.

The princely magnificence of the Swan has attracted from the earliest day the attention of every admirer of the beauties of creation, and having been chosen by the ancients as the mansion of departed Poets, is sufficient evidence of their love and veneration.

> "The dying Swan's last, sweetest note,"

was supposed to be the departure of the poetic spirit to happier realms, and although, to the crude ear of moderns, the dying expiration of the Swan is not wafted on the wings of melody, the change may have arisen from a vitiation of musical taste, or perhaps, as Morin says,

> "The Swans that once so sweetly sang,
> Sing very illy now."

There have been heretofore described but five distinct species of this bird. The wild Swan of Europe, has been recently divided by Mr. Yarrell into the Hooper Swan and Bewick Swan, although, until this division, they were considered the same bird and identical with the Swan of America. 2dly, the Mute or Tame S. *(Cygnus olor,)* 3dly, the Black Necked S. of the Falkland Islands, *(C. nigricollis)*, and the Black S. of Australia *(C. atratus.)*

As the distinction drawn by Mr. Yarrell between the two species in the common wild Swan, which he presumes to hold good both in the European and American bird, cannot be readily discovered, and the habits of both being much the same, I will consider them, for the *present*, as identical.

The Swan of which we are now speaking, has spread widely over the greater part of the northern hemisphere, being found at different seasons, in perhaps every portion of that immense zone between the Arctic Circle and the Tropic of Cancer, descending in the autumn into Egypt and the West India Islands, and during the summer, disturbing with its harsh scream the solitary forests of the Frozen Ocean. In America, they were seen by Captain Franklin on the shores of the Arctic Sea, and Iceland is but a stopping place for crowds that pass to the north even of that Island. They make their appearance at those places in April, and at Hudson's Bay in March.

The journal of Major Long's Expedition to the Rocky Mountains says, the Swans were seen passing to the north as early as the 22d of February. They are the first migratory birds that arrive at Hudson's Bay, except a few snow-birds which lead the van of this vernal expedition. The Swan breeds in Lapland, Kamtschatka, Siberia, Iceland, and in Hudson's Bay, and in the range of lakes and rivers found to the westward and northward of the latter place, across the whole American continent. They arrive at these summer residences in flocks of from twenty to one hundred, and, as the spots suitable for the nests, are often still frozen, they frequent the feet of falls and rapids, and streams that can be kept open by splashing and beating with their wings and feet. They are strictly monogamous, and breed in the islands and low ground, amid the reeds and grass, making their nests of leaves and sedge. They desposit from five to seven eggs of a dirty white colour with a shade of green, "one of which," says Hearne, "is sufficient for a moderate man without bread." The eggs hatch in July, and in August the moulting season arrives, when they are unable to fly, and are killed in Iceland in great numbers by dogs, who are taught to seize them by the neck, and at Hudson's Bay, by sticks and stones. They can, however, even in this state, far outstrip a canoe, traversing the surface of water with the assistance of the stumps of their wings and feet, at a very rapid rate. The traveller just quoted, describes two species of Swans that frequent Hudson's Bay, one kind, weighing upwards of thirty, and the other but about twenty pounds; the largest birds making the loudest note. The smallest species keep the sea coast, and are more rare than the other, generally appearing but in pairs.

Writers on Iceland say, that the yearling Cygnets remain there the first year. In America, this does not take place, all going off together.

About the first of September, the Swans leave the shores of the Polar sea, according to Franklin, and resort to the

lakes and rivers in about the latitude of Hudson Bay, (60°) where they remain preparing for a departure for the winter, until October, when they collect in flocks of twenty or thirty, and seizing favourable weather, with the wind not opposed to the direction of their flight, they mount high in the air, form a prolonged wedge and with loud screams depart for more genial climes. When making either their semi-annual transmigration, or on shorter expeditions, an occasional scream equal to "how do you all come on behind" issues from the leader, which is almost immediately replied to by some posterior Swan with an "all's well" vociferation. When the leader of the party becomes fatigued with his extra duty of cutting the air, he falls in the rear and his neighbour takes his place. When mounted, as they sometimes are, several thousand feet above the earth, with their diminished and delicate outline hardly perceptible against the clear blue of heaven, this harsh sound softened and modulated by distance, and issuing from the immense void above, assumes a supernatural character of tone and impression, that excites, the first time heard, a strangely peculiar feeling.

In flying, these birds make a strange appearance; their long necks protrude and present, at a distance, mere lines with black points, and occupy more than one half their whole length, their heavy bodies and triangular wings seeming but mere appendages to their immense projections in front.

When thus in motion, their wings pass through so few degrees of the circle, that, unless seen horizontally, they appear almost quiescent, being widely different from the heavy semi-circular sweep of the Goose. The Swan, when migrating, with a moderate wind in his favour, and mounted high in the air, certainly travels at the rate of one hundred miles or more an hour. I have often *timed* the flight of the Goose, and found one mile a minute a common rapidity, and when the two birds, in a change of feeding ground, have been flying near each other, which I have often seen, the Swan invariably passed with nearly double the velocity.

The Swan in travelling from the northern parts of America to their winter residence, generally keep far inland, mounted above the highest peaks of the Alleghany, and rarely follow the water courses like the Goose, which usually stop on the route, particularly, if they have taken the sea board. The Swan rarely pause on their migrating flight, unless overtaken by a storm, above the reach of which occurrence, they generally soar. They have been seen following the coast in but very few instances. They arrive at their winter homes, which is a belt crossing the whole continent, and extending from the latitude of 40° to Florida, and even to the West India Islands and Mexico, in October and November, and immediately take possession of their regular feeding ground. They generally reach these places in the night, and the first signal of their arrival at their winter abode, is a general burst of melody, making the shores ring for several hours with their vociferating congratulations, whilst making amends for a long fast, and pluming their deranged feathers. From these localities, they rarely depart, unless driven farther south by intensely cold weather, until their vernal excursion. When the spring arrives, a similar collection of forces as at the north, takes place in March, and, after disturbing the tranquil bosom of the water for a night, by incessant washing and dressing, and alarming the quiet neighbourhood by a constant clatter of consulting tongues, they depart for the north about daylight with a general *feu-de-joie* of unmusical screams.

The Chesapeake Bay is a great resort for Swans during the winter, and whilst there, they form collections of from one to five hundred on the flats, near the western shores, and extend from the outlet of the Susquehannah river, almost to the Rip Raps. The connecting streams also present fine feeding grounds.

They always select places where they can reach their food by the length of their necks, as they have never, so far as I can learn, been seen in this part of the world, to dive under the water, either for food or safety. Hearne (Jour. Frozen Ocean,) says, that, at Hudson's Bay, "by *diving*, and other manœuvres, it is impossible to take them by the hand when moulting." I have often seated myself for hours, within a short distance of several hundred Swans, to watch their habits and manners, and never saw one pass entirely under the water, though they will keep the head beneath the surface for five minutes at a time. C. L. Buonaparte, Synop. Birds, U. States, in describing the genus Cygnus says, "from their conformation and lightness of the plumage, they are unable to sink the body."

The food they are most partial to, is the canvass back grass, (Valisneria *americana*,) worms, insects and shell-fish, never I believe, touching fish, however hardly pressed for support. The Geese and Swans frequently feed, but never fly, together.

These birds are so exceedingly watchful, that if there are but three of them feeding together, one will generally be on guard, and when danger approaches, there is some mute sign of alarm, for I have never heard a sound at such times.

However much noise had been made before, the instant an alarm occurs, there is perfect silence, their heads are erected, a moment's examination determines the course, when, if the case be not too urgent, they depend on swimming, if escape be necessary. They rarely fly even from the pursuit of a boat, unless very closely followed, and when they do arise from the water, either for escape or from choice, it is generally with a scream, and when alighting,

particularly, if among others, there is usually a "how d'ye do" of expression on all sides. Even when wing-broken, these birds can swim with great rapidity, and if not otherwise hurt, a single oars-man in the best constructed boat, can rarely overtake them. A gentleman who resides on the Chesapeake near Bush River, informed me, that a few years since, he had wounded a Swan and afterwards cured and tamed it. To prevent it from flying away, he clipped its wing, but it occasionally escaped to the water, where he had often followed it for several miles, with two rowers, before he could catch it. The unwounded birds, have frequently been seen to collect around a cripple companion and urge it to escape, pushing it forward, and I have been informed by good authorities, that they have been observed to place themselves on each side of a disabled Swan, supporting a broken wing, and almost lifting the subject of their affectionate care out of the water.

Whilst feeding and dressing, Swans make much noise, and through the night, their vociferations can be heard for several miles. Their notes are extremely varied, some, closely resembling the deepest base of the common tin horn, whilst others, run through every modulation of false note of the french horn or clarionet. Whether this difference of note depends on age, sex or species, I am not positively assured. Lawson, a traveller in Carolina, in 1700, says, the *Trumpeters* are much the largest birds, and make the French horn screams, whilst the *Hoopers* utter the deep notes. Having never yet satisfied myself of the existence of two species of the American Swan, I have supposed the various voices depended on age or sex, the *patriarchs* producing the deep organ note.

The Swan requires five or six years to reach its perfect maturity of size and plumage, the yearling Cygnet, being about one third the magnitude of the adult, and has feathers of a deep leaden colour. The smallest Swan I have ever examined, and it was killed in my presence, weighed but eight pounds. Its plumage was very deeply tinted, and it had a bill of a beautiful *flesh* colour, and very soft. This Cygnet, I presume was a yearling, for, I killed one myself the same day, whose feathers were less dark, but whose bill was of a dirty white; and the bird weighed twelve pounds. This happened at a time when my attention was not turned scientifically to the subject, and I have forgotten other singularities of the specimens. By the third year, the bill becomes black, and the colour of the plumage less intense, except on the top of the head and back of the neck, which are the last parts forsaken by the colour. Swans of the sixth year, have assumed all the characters of the adult, and very old birds have a hard protuberance on the bend of the last joint of the wing. When less than six years of age, these birds are very tender and delicious eating, having the colour and flavour of the Goose, the latter quality is, however, more concentrated and luscious. Hearne considers a Swan "when roasted, equal in flavour to young heifer beef, and the Cygnets are very delicate." As these birds live to a great age, they grow more tough and dry as they advance, the *patriarchs* being as unmasticable and unsavoury, as the Cygnets are tender and delightful.

There are many modes practised in the United States of destroying these princely ornaments of the water. In shooting them whilst flying with the wind, the writer just mentioned declares, "they are the most difficult bird to kill I know, it being frequently necessary to take sight ten or twelve feet before the bill." This I should consider an unnecessary allowance, unless driven by a hurricane, but, on ordinary occasions, the bill is aimed at, and if going with a breeze, at a long shot, a foot before the bill would be quite sufficient. The covering is so extremely thick on old birds, that the largest *drop* shot will rarely kill, unless the Swan is struck in the neck or under the wing, and I have often seen large masses of feathers torn from them, without for an instant, impeding their progress.

When wounded in the wing alone, a large Swan will readily beat off a dog, and is more than a match for a man in four feet water, a stroke of the wing having broken an arm, and the powerful feet almost obliterating the face of a good sized duck shooter. They are often killed by rifle balls thrown from the shore into the feeding column, and as a ball will *ricochet* on the water for several hundred yards, a wing may be disabled at the distance of half a mile.

These birds are often brought within shooting range, by sailing down upon them whilst feeding, and, as they arise against the wind, and cannot leave the water for fifteen or twenty yards, against which they strike their enormous feet and wings most furiously, great advantage is gained in distance. They must be allowed on *all* occasions to turn the side, for a breast shot rarely succeeds in entering.

When two feeding coves are separated by a single point, by disturbing the Swans in one or the other occasionally, they will pass and repass very closely to this projection of land, and usually taking as they do, the straight line, each gunner to prevent dispute, names the bird he will shoot at.

In winter, boats covered by pieces of ice, the sportsman being dressed in white, are paddled or allowed to float during the night into the midst of a flock, and they have been oftentimes killed, by being knocked on the head and neck by a pole. There is, however, much danger in this mode, as others may be engaged in like manner, but shooting, and at a short distance, the persons might not be distinguished from the Swan. These birds seem well aware of the range of a gun, and I have followed them in a skiff for miles, driving a body

of several hundreds before me, without the possibility of getting quite within shooting distance.

The skins of Swans still covered by the down, which is very thick, are often used in our country for bonnets and tippets, and at Hudson's Bay, a great trade formerly existed with the down and quills. The Indians also employ the skins for dresses for their women of rank, and the feathers for ornaments for the head.

It is a curious circumstance, that Wilson has neither figured nor described this beautiful and common bird in his Ornithology, but Mr. Lawson the engraver of his splendid plates, and also his personal friend, informs me, he had waited for another southern expedition, which he did not live to perform. A particular history, in detail, of this splendid bird has heretofore never been given to the public.

The following description of the Genus CYGNUS I have taken from Buonaparte's Synop. Birds. U. S. "Bill at base higher than broad, gibbous, subcylindric above, of equal breadth throughout, obtuse: teeth lamilliform: upper mandible unguiculated and curved at tip, lower shorter, narrower, covered by the margins of the upper, flattened: nostrils medial, oval, open, pervious, covered by a membrane: tongue thick, fleshy, broad, fimbriated on the sides, obtuse. Head small, lora naked: neck longer than the body: body much compressed, elegantly shaped: feet far back, very short and stout: wings long when folded, primaries hardly reach beyond the secondaries: first and fourth primaries equal, second and third longest.

"C. *ferus*. White, bill black, without protuberance, bare space round the eye yellow."

The American Swan is five feet long—bill three inches—twenty feathers in the tail and weight from twenty-four to thirty pounds.

The wild Swan differs from the mute or tame Swan, according to the "Description of the Menagerie of the Zoological Society of London published under the direction of the Institution" in having twelve ribs on each side, whilst the tame has but eleven. There is no protuberance on the bill as in the tame, and in the latter, the bill is of an orange red, with the exception of the edges, the protuberance on the top, a slight hook at the extremity, the nostrils and the naked spaces extending from the base towards the eyes—all of which are black. The mute, carries the neck more curved than the other, and the windpipe passes into the lungs without any of the singular convolution presently to be described. Buffon strangely remarks, that this difference in the internal structure may be the result of domestication. This would be an astonishing effect produced by association with man, that the credulity of the times even of that writer, could hardly believe, still less, in these days of science and discovery.

Linné says the Wild Swan (A. *cygnus ferus*) has eleven on each side, and the tame twelve, which is the reverse of the above description. Pennant also gives twelve for the wild bird I have not had an opportunity of ascertaining the number in our own Swan.

The wild Swan of England, and that of America, have been till lately considered by naturalists as identical, and consisting of but one species. Mr. Yarrell, evidently a close observer of nature, in a paper published in the Linnæan Transactions of London, has asserted the existence of two distinct species in the English wild Swan, and supposes there is also the same in America. His new species, he calls after the celebrated naturalist Bewick (*Cygnus bewickii*), and says, it differs from the Hooper or the common kind, in having the bare space around and before the eyes, and over the front of the forehead to the extent of 3-4 of an inch, orange yellow—bill narrow at the middle and dilated at the point—eyes, orange-yellow—tail having eighteen feathers, whole length three feet nine inches and weighing but fourteen pounds; whilst in the Hooper, the bare space is yellow—eyes brown—sides of bill parallel—tail having twenty feathers, whole length five feet and weighing twenty pounds. The greatest difference however, consists in the arrangement of the trachea or windpipe in the sternum or breast bone. This writer says, in the Hooper, the windpipe after passing down the neck, continues on and enters a chamber formed between the two plates of the keel of the bone, and after running to the depth of three inches in a bone of eight and a half inches in length, folds on itself, *always* retaining the vertical position in its doubling, and returns out at the same orifice it entered the keel, and winding round the merry-thought, (*os furcatorium*), takes the regular route to the lungs.

In his Bewick's Swan, a similar cavity is formed in the keel for the windpipe, but it continues back through the whole length of the keel, and into the *body* of the sternum and forms a *horizontal* cavity there, whilst in the keel, the greatest diameter of the chamber is *vertical*. This posterior sack, is formed by the separation of the upper and lower plates of the "posterior or flattened portion of the breast bone, and producing a convex protuberance on the inner surface." Into this posterior sack, the windpipe enters after traversing the whole length of the cavity in the keel, and its duplication changes from the vertical to the horizontal position, the loop occupying this round bony bag. In a bone six 3-8 inches in length, the depth of the whole cavity was five 3-4 inches, showing an immense anatomical difference between this Swan and the Hooper. In the oldest Hooper, the cavity *never* extended in the slightest degree, farther back than the keel, and the fold of the pipe *never* left the vertical position at any age; whilst in the Bewick, in the

youngest bird there was *always* a chamber formed in the flattened part behind the keel, even where the wind pipe was too short, from the youth of the bird, to occupy it entirely. In these cases the trachea, passed into the keel but retained the perpendicular position of the duplication.

Mr. Yarrell mentions a paper in the London Philos. Trans. for 1766, on a Swan brought from Philadelphia to London, and dissected there, which he considers of the new species.

This singular arrangement of the windpipe of the Northern wild Swan, has been described by all writers on the bird for more than a century. A disposition to the same formation is seen in the New Holland Swan, but not to the same extent, and also in the Cranes. This peculiarity of the Swan is not a sexual difference, being found in every case whether male or female, and the development is always in exact correspondence with the age. This singular formation, it is supposed, is designed to give intensity to the voice, on the same principle as the convolutions of the French horn, although the author of the paper just alluded to, considers it necessary to enable the bird to remain under the water a longer time.

Having paid some attention to the Swan, in relation to its habits particularly, I am somewhat induced from my observations to consider the American Swan of but *one* species, notwithstanding the opinion of Hearne, Lawson and Yarrell, and *that* species entirely distinct from *any other*. I have had an opportunity of examining five prepared birds and five sternums, now in this city, and the distinguishing marks between the latter and those described by Mr. Yarrell appear sufficient to indicate a true American Swan and deserving the title of *Americana*.

I will here merely mention the general lines of demarcation, as all my data at this time, rests on prepared specimens, but when the recent Swan can be procured, a systematic examination of every distinguishing trait both external and internal will be made, when doubtless many other well marked specific differences will be discovered.

All the preserved Swans of which I have spoken, weighed when recent, more than twenty pounds and four of them near thirty pounds—have twenty feathers in the tail—bare space on the bill yellow, and sides of the bill parallel, with other external marks of the Hooper. The colour of the eye, I cannot positively learn at this time, some difference of opinion existing even with the preservers of these specimens, two of them beautifully prepared by Mr. John Doughty, and now in his collection, having yellow eyes, which he assures me, was the tint of the original iris when the birds came into his possession, which was several days after being killed. The Swans finely preserved by Mr. Titian Peale, and now in the Philadelphia Museum, have brown eyes, and a regular preserver of subjects of Natural History informs me, that all the Swans he has prepared, had black eyes. As age may produce a change in the colour of the iris, all these declarations may be correct in relation to the particular cases.

But the breast bones which I have mentioned, have every attribute of the Bewick, except being much larger. The cavity passes through the keel into the *body* of the sternum, and forms the horizontal chamber, which is occupied to its posterior extremity by the loop of the trachea, turning to the horizontal position according to the direction of the route. I have at this time in my possession, three perfect specimens of this formation, one of which, was from a bird of the third year and still retaining many dark feathers. The horizontal pouch in the *body* of the bone, is about an inch in lateral diameter, with the trachea running to the bottom. The next instance is still more developed, and the third, which I know came from an old bird, is in its whole length eight inches, and is perforated to the depth of seven and a half inches. The chamber in the *body* of the sternum projects on the upper surface near one quarter of an inch, is three inches in its lateral diameter and allows a vacant circle of one and a half inches in diameter *within* the loop of the windpipe. The vertical portion is just one half of the whole duplication.

If wide anatomical differences make distinctions in species, here is certainly a broad line of demarcation between our Swan and any other, assuming in its structure a middle course between the Hooper and Bewick Swans, and possessing many of the characters of both.

THE DEATH SONG OF THE SWAN.

By Charles West Thomson.

Farewell, ye summer streams where I have sported
Full oft by mossy rock and flowery dell,
I lave no more where once my flock resorted—
Ye summer streams farewell!

No more upon your verdant banks reclining,
I see your breast reflect the clear blue skies,—
Ye quiet waters in the sun-beams shining,
Your humble votary dies.

Yet 'mid your lovely scenes where fairies wander,
In many a gay and sportive moonlight throng,
I pause on life's dim verge awhile to ponder—
Accept my latest song.

Accept the lay—the soft melodious numbers,
Vouchsafed by Nature to my parting breath,
The gentle prelude to unbroken slumbers—
The symphony of death.

I go, no more to breathe among the mountains
The ambrosial fragrance, which the wild flowers fling,
I go, no more beneath the woodland fountains
To wet my snowy wing.

Yet tho' no more I rest in shady bowers
Where my youth's day-spring saw the waters shine,
When death has come, beneath the summer flowers,
O quiet sleep is mine.

The wild wave from the rock shall still be springing,
The mountain mists shall hover o'er the dell,
But I amidst them no more shall be winging—
My native streams farewell!

TREATISE ON BREAKING DOGS.

(Concluded from page 163.)

It is expected now, that your Dog has acquired spirit, and keenness for game, and the several day's hunt have produced habits of industry. The next thing, then, to encounter, is, that when he is approaching game, he may show a disposition to rush in, and flush it from before the other Dogs, while at a stand; or, if you are hunting him alone, before you are sufficiently near to get a shot, you must, of course, check this disposition immediately, but with great prudence. This is the most important point to be experienced, during the whole season of training; and it often happens, at this period, that many valuable young Dogs are ruined forever. Great care and patience are absolutely necessary in the tutor; and much severity towards the young Dog, at this time, is seldom, if ever, attended with good, but, nine times out of ten, much evil. And the plan, adopted by some men, of shooting their Dogs, when thus keen after game, is, to say the least, absurd and cruel; and it is next to a miracle, if, after this treatment, a Dog is not utterly ruined. I have seen young Dogs of the finest promise, ruined in this way, because in error, or over-zeal, they flushed the game, and were shot in a most cruel manner, by an unfeeling master, while the poor animal, with blood streaming from his fifty wounds, would cry most piteously, and with looks of reproach seemed to say, "Is this the reward of my faithfulness? Are the errors committed in an over-zeal to serve you, to be punished with death-like cruelty? Or, is it because I have been created subservient to your pleasures, that you load me with sorrow and distress?"—I hope to see this inhuman punishment of the poor Dog entirely abolished: at any rate, *sportsmen* should discard it from their practice. There is but one instance in which humanity will admit of this punish-

ment, and that is, when your Dog is chasing or worrying sheep: and this opportunity seized, will effectually cure a Dog of this propensity, without the necessity of destroying his life. The effect that this punishment has on the Dog, is, to make him "blink," or run from the game, so soon as he smells it, or, after the report of the gun, to skulk away and hide in the bushes, or go home.

I know it is unpleasant and mortifying, that a Dog should thus rush in and spoil your prospects of shooting, and at a period, too, the most interesting to the sportsman. This serves to irritate, and the master, in a sudden impulse, commits an act of cruelty towards his brute, which, in his cool, reflective moments, he would justly condemn; but he should remember, that it is immaturity and inexperience in the Dog, which causes these seeming errors, and a little forbearance and prudence, at this time, will produce the happiest results.

When your Dog is approaching game, which is very easy to discover, by his greater keenness and short and hurried ranging, and his wariness to draw closer to the birds, you should always warn him, by saying—"take heed," "mind," or, "be careful." These expressions will, if used a few times, strike his notice, especially if other Dogs are near him, which understand and obey the sounds. When he has drawn so near to the birds as to make a halt, you should speak out distinctly to him, the magic word "toho." This will recal to his memory, forcibly, the lessons you gave him at home, and little or no difficulty will be experienced in bringing him to become a staunch Dog, whenever he scents the game. He now understands the word, and the use of it, ever after, will be to him, the signal of obedience; whether it be to back other Dogs, or stand the birds alone. At the first stand, however, that the Dog makes, it will be well for the sportsman, to endeavour to get up to him, in order to caress him, and make him familiar with your presence while on his stand; and, in this situation, the word "toho" should be repeatedly used. This kindness to a Dog, and words of encouragement, when fulfilling his duty, have a most salutary effect upon him, and should be as readily embraced, as the contrary treatment, when fault is committed. It is an important point to make a Dog fear you, but it is equally important to secure his affection; as between the two you can manage him to your mind. Next to training your Dog to stand, it is important he should be taught to back-set the other Dogs, which may be effected when the old Dogs are at a stand, by bringing the young Dog up to them, so as to get the scent of the game, and then, by using the expression "toho," it will produce the necessary effect. When you discover one Dog at a stand, especially in high grass or bushes, it should be an invariable rule in the sportsman, to use this word, as it will give the other Dogs notice of the presence of game, and cause them immediately to look around for the cause of this expression, when they will most likely discover the Dog at his stand and immediately back him. To enforce this more particularly on the young Dog's attention, the "toho" should be accompanied, in this case, with a sign, by raising the hand. Should you, however, find great difficulty in breaking your Dog, to back or stand, by these ordinary rules, your next, and perhaps only plan, will be the trail-cord, or, as some writers call it, the "trash-cord," and whip. This cord is about twenty or thirty yards in length, of the thickness of a small quill, to be fastened to the collar around the Dog's neck, and dragged by him through the stubble. As this, however, is attended with much labour on the part of the Dog, it would be well to select some field where you know there is a covey of birds; and, in ranging about, the moment he approaches them, he will first halt, and then spring at them, with a view of catching them: this, then, is your time to check him. When he makes a halt, seize the cord, and when you give it a slight pull, cry out sharply, "toho," and also do the same when backing other Dogs. Should he still prove restive, a smart application of the whip, also, will answer. A very few lessons of this kind, will amply reward the sportsman for his trouble; and he ought never to be discouraged at the prospective difficulties of training a Dog, when measures of this kind are necessary, as it generally is the case, that this description of Dogs, after being trained, are of the first order. One of the finest Dogs I ever shot over, I had to train, both with the muzzle-peg and trail-cord, and I believe every other plan would have failed; and his spirit, or impetuosity, was so extreme, that I frequently through impatience was going to relinquish him altogether, as incorrigible, but with steady perseverance, I had the satisfaction to make him a superior Dog.

Having succeeded in getting your Dog to back and stand well, the next very important thing to observe, is, to watch your own actions. A very trifling fault on your part, may have an injurious effect on your Dog. Therefore, when at the very interesting moment of their approach to game, evince no eagerness, and interfere but little with their actions, but be silent and composed until they make a final stop; and the few warning words necessary, should be addressed in a low and moderate voice. Now then, as before stated, is your time to caress the young Dog; after which, walk boldly up to the game and flush it, and, if successful in your shot, show the bird to the young Dog. It should be your invariable rule, to flush the game yourself; and never, on any account, suffer your Dogs to break from their point and do it for you. And to prevent this, you should walk deliberately to the game, and *never run;*

for should you show too much eagerness, it will make your Dogs impetuous also, and the least staunch Dog will certainly rush in and spoil your shot. Besides producing a habit of impatience in the Dog, it unfits the sportsman for that deliberation necessary to success. At every fire, the master's first care should be to observe his Dog, and rather lose the bird than, by any neglect, injure the Dog. Therefore, immediately after shooting, the Dog should be called in, and made to lie at your feet, by using those expressive words, as, "down," "close," or "*down charge*," and not in any wise, be suffered to leave you, or chase the bird, until you are prepared for the game which may spring up around you. Then give a sign of your readiness, as *hold off*. The sportsman who will observe this rule strictly, cannot fail to have fine shooting, whenever he gets his birds into good cover. I have seen Dogs possessing every desirable quality but this, so spoil the sport on the first covey of birds, as to dampen the pleasure of a whole day's excursion; therefore, too much care cannot be observed in this point of training.

A man should study well, and become perfectly acquainted with the disposition of the animal he attempts to educate —on this depends in a great measure his success in training, for the dispositions of Dogs vary like those of men. Sometimes it is improper to hunt a high spirited young Dog in company with an old well broken Dog, as it frequently happens that the latter will excite the jealousy and impetuosity of the former, which, in his ambition to excel, will commit many errors, that he would not if hunted alone, and draw on himself, the undeserved displeasure of his master. Again, other young Dogs, are mere imitators, and will only follow the wake of an old Dog during the whole day, instead of hunting seperately and independently—while some will bear the most severe chastisement, and others frightened at merely the sight of a whip—of this the sportsman must judge and act according to these varieties.

During the process of training a Dog, the whip will certainly be a necessary auxiliary, but much judgment is necessary to use it properly, which can only be done by knowing the disposition of the Dog ;—every error should be punished, but according to its demerit, and a regular system of training must be commenced and continued, without relaxing the least in discipline, for the Dog will take advantage of every oversight of yours to his faults, and lenience, in case of necessary chastisement, will injure him more than undeserved punishment ; and being educated with this discipline he will always expect from your hands some notice of his errors, whether accidental or intentional, and punishment should be meted out commensurate with his deserts, from an angrily spoken word, to the severity of the whip.

Another rule from which the sportsman should never deviate, is, always to make your Dog *come to you*, to be chastised *this is an important point to obtain—as in this case, he will on every error, no matter how trivial, come to you for correction, and crouch at your feet, when he must always be noticed—but, should the opposite plan be adopted by a sportsman, of running up to his Dog to flog him, he, after the first severe chastisement, will run from and avoid you, and on every offence, will, upon your scolding him, most likely lie down in the field—but the greatest disadvantage is, that, when a dog may be hunting in a swamp or difficult place, and commits error, harsh words will have the tendency to keep him out of sight, and no persuasion whatever will bring him to you ; you then, cannot get to him, and he will not come to you ; he will therefore, be worse than useless. Consequently, habituate him to come to you for chastisement, in the early stage of training, and before you take him to the field, and you will soon discover the importance of this lesson.

A Dog should be broken with as few words and little noise as possible, and with these words should be used signs, as moving the hand right, left, forward, and toward you, according to to the direction you wish the Dog to go—he will soon learn these signs, and his obedience to them will prevent far ranging—a Dog may be learned to quarter a field handsomely, in this way, if while waving, the master will also walk the direction—the whistle is recommended and used by many sportsmen ; but I never could see much advantage arising from its use ; they who choose can adopt it if they think proper.

The plan recommended by some writers, never to suffer your Dog to break field, is nothing more than a reiteration of the old English rule, and enjoined, because others have adopted it, without any good reasons given, why it should be enforced, is in my view, altogether useless. In a country like ours, where it sometimes occurs you are hunting in fields of but few acres, this rule could not be enforced without detriment to the Dog, or injury to your own comfort. Being frequently surrounded by fields, in each of which you may probably find a covey, you are left uncertain of the fact until your Dog has faithfully hunted the first field you enter, and he discovers by their trail, they are in the adjoining field, and crosses the fence, to draw upon the game; now is it not better that the Dog should keep his point, than that he should be called back to the original field, because affected etiquette says, you and he must leave together? The plan may answer, where you find fields containing from thirty to one hundred acres, and you in danger of losing

* When chastising a Dog, you should avoid, kicking him in the sides, striking him over the head, punching him with the butt of your gun, pulling him by the ears, or throwing any missiles at him; a training whip should be provided, and always used

your Dog—but there are few sportsmen to be found now, who will prohibit a Dog from leaving any moderate sized field solus, if they think he is approaching game. If my Dog be properly broken, and I have confidence in his staunchness, I would much rather trust his nose and judgment, than my knowledge; for to attempt to correct a Dog, and instruct him according to your notions, when he winds the game, and knows better, is only playing the fool with him, and being at a loss to comprehend you, he may be injured, beside spoiling your own sport. Many a covey of quails have escaped because the *wise* sportsman chose to make his dog act contrary to his instinct.

If a Dog is trained well when young, he never will go so far from you, but, that a moderate sound may reach his ears, and therefore, I condemn the whistle and other noise; if a Dog is broken to either the whistle or many words, he will always take the liberty to range as far from you, as these sounds can be heard, for, depending on them, he seldom looks at his master, and only knows of his error, when he can no longer hear them; but, train a Dog to a few words, and the waving of your hands, and he will not range too far from you, he, depending on your actions for instruction, will keep near you, that he may see clearly, and obey the direction you wish him to go. There is nothing more unpleasant than to hunt in company with those who are whistling, blustering, and hallooing at their Dogs: for, setting aside the unpleasantness of their noise, it often deranges the Dogs, frightens the game, and destroys much sport.

I most strenuously recommend that a Dog should be learned to bring the game, although many sportsmen condemn it as injurious for several reasons; the first they say is the danger of the Dog's flushing the game, when running for the shot bird; the second is, that after the Dog attains some age, he becomes hard mouthed, and mashes the bird; and the other reason is, that it causes a scuffle whenever there are several Dogs in company. In answer to these reasons, I would remark, that there is scarcely any habit in a Dog but by proper treatment may be altered, and it proves only a deficiency in training them, if these bad habits are preserved in the Dogs, but a Dog *may* and *ought* to be trained, to bring the game or drop it, at the master's pleasure; this can also be done, at the time, and by adopting the plan recommended in the former part of this treatise. At all events, in a country like this which abounds with streams, thickets, and other difficult places, the advantages of having a Dog to find and bring dead game, will more than counterbalance other inconveniences. I believe no sportsman, who has a good Dog which will do this, thinks the worse, or objects to him on that account; and objections to this plan are raised by those who have no Dogs of this kind, and are unacquainted with the advantages arising from the practice.

One of the most difficult things to break a Dog of, is the habit of chasing rabbits, but, as has been before stated, there is no practice so deeply rooted in a Dog, but if taken in time may be corrected, so this may be reformed also; and in the first place a sportsman should never shoot a *rabbit* in sight of his Dog, or carry one in his game bag, as the Dog, in this case, very naturally supposes, it is as much the object of your pursuit as the quail or partridge; now, if the master will never shoot a rabbit in his Dog's presence, and *secondly*, will severely flog him for the two or three first offences, I will guarantee there will be no difficulty on this score, and no necessity to resort to those cruel practices of shooting the Dog, and "thrusting a wire through the cartilaginous part of his nose," and affixing to this a cord, to which must be tied a hare, and made to spring about and with a smart application of the whip, inflict pain on the dog, while exclaiming "*ware hare.*"

Some Dogs after being trained, are so fond of the gun, that they will follow any person with a gun who calls them; to break them of this is a thing to be much desired; for, should he be a superior Dog, the person who allures him from his home will be loth to return him, and is often induced to appropriate to his own pleasures by using, or profit by selling that property which belongs to another.

To break a Dog of this disposition, I would recommend that the owner, get some person, a stranger to the Dog, to procure a gun, and entice the animal some considerable distance from his home, when he should be seized roughly by the neck, and the whip applied with considerable severity, after which ordered home; this plan followed once or twice, will completely break him of the propensity.

Dogs should not be permitted to spring on their master or any other person with their feet; it is a bad practice, and the offender should always be punished for it—and the following receipt to break them of chasing poultry is selected. "Respecting poultry, if you find the whip insufficient to restrain him, take a cleft stick, to one end of which tie a living fowl, and insert the dog's tail in the cleft at the other, and tie it in tight, so as to cause him some pain, then give him a few stripes with a whip, and let him run off; when he has tired himself, and refuses to run any longer, take the stick from his tail, and beat him well about the head with the fowl; apply the whip also smartly; after this there will be little reason to fear his running at fowls again. If a Dog be allowed to kill poultry unpunished, it will make him hard-mouthed and apt to break his game; to say nothing of the injury he may do to his master or neighbours."

A Dog should always be fed with wholesome food; a hearty meal consisting of boiled meat, with some Indian bread or mush, and milk. Once a day is sufficient for any

Dog in a state of idleness; but two meals are necessary during the hunting season; and at all times, a constant supply of good, clear, and cold water, if possible, should be placed within the Dog's reach. No sportsman should give his Dog water, which he would not be willing to drink himself, and it is disgraceful in any man, who keeps this animal confined, and permits him to drink stinking filth from the gutter and slop tub, when his fever or parching thirst calls for the best and most cooling water.

A Dog is in the best condition for hunting when he is not very fleshy, both extremes of being over-fat or over-poor, are detrimental to the comfort and ability of a Dog to hunt, and should be avoided. To keep a Dog in proper trim, he should have plenty of exercise, but especially before the shooting season commences; and every gentleman who rides in the afternoon should give his Dog a good run to the country; this gives him an opportunity to eat grass, and hardens him to fatigue, and disrobes him of superfluous flesh.

When sickness approaches a Dog, nature points out to him the use of grass, as a preventative or remedy, and it is necessary, that this vegetable should be placed within his reach, and every gentleman who can, should grow a small quantity of oats, (being an excellent substitute for grass,) in his yard, which will be readily eaten by the Dog. Every Dog should have a good kennel provided for his comfort, and on no account be permitted to enter the dwelling. This practice should be deprecated; what is more unpleasant than to see a Dog lounge about the parlour, bed-rooms, or stretch himself at full length before a fire, to the great inconvenience of the family, and the injury of the Dog? A Dog, housed in this way, is seldom hardy enough to stand much fatigue, or the inclemencies of the winter season. These rules are now submitted to all who desire to become acquainted with the principles of training Dogs. The theory, however, is not of great value, unless accompanied with much practice, and the first impressions you give your dog, and the progress he makes during the first season of hunting, generally determines his value, and whether he will be worth your trouble and expense of keeping him. I shall hereafter treat on the diseases of Dogs, their treatment, and on the principles of shooting. I.

BATTLE BETWEEN A SNAKE AND AN EEL.

Messrs Editors,

While I was walking, a few days since, along the bank of a shaded creek, a few miles from Philadelphia, my attention was attracted towards some weeds that were growing near the edge of the water, from which proceeded a most singular noise, accompanied by a considerable splashing of the water; unable, on my first approach, to discover the cause, owing to the height of the weeds, and my distance from the spot, I gained nigher access, by means of a fallen tree, and to my surprise and exceeding interest, I saw a violent combat between a Snake and an Eel. The former was of the water species, and, as nigh as I could judge, about four feet in length—the latter was much shorter, but equal if not superior in thickness; how long the combatants had been waging this war, was difficult to determine, but, by judging from their vigorous efforts, when I first discovered them, I suppose they must have just commenced. For a considerable length of time, neither party appeared to gain advantage—their muscular actions were violent in the extreme and appeared to engage in deadly strife. Whenever the eel succeeded in drawing its antagonist a short distance into the water, (and its chief efforts appeared to be directed to this end,) it was evident, the snake was no match for it; and this, the snake was aware of, and would redouble its exertions to regain the shore, and bring the eel with it, *then* the battle would be in favour of the snake; each evidently endeavoured, to wage war against the other on his own favourite element, and so would it preponderate, according as each succeeded in getting this advantage of its adversary—the eel appeared to lose that powerful energy, when rolling in the dirt, which belongs to it in its native element, and, it was as sensible as the snake of the difference, and would also by increased effort get back again into the water with the snake. At times they were completely encircled in each others folds, and although their rage was manifested by the manner in which they would continually bite each other, yet their whole efforts were devoted to their muscular strength to decide the victory. After continuing this interesting combat for rather more than ten minutes, they separated mutually—the eel returning to its native bottom, and the snake to the grass. Believing that a circumstance of this kind is seldom witnessed, I have communicated it for insertion in your valuable work.

T. M.

July 6th, 1831.

AN ENCOUNTER WITH WOLVES.

The Deer in the vicinity of the prairies, of which I have been speaking, are very large. Some of them weigh from 150 to 200 pounds. Wild Turkeys too, are here numerous and they sometimes weigh from 20 to 30 pounds. But facts like these unduly affect the imagination. These kinds

of game cannot always be found; the toils of the chase are frequently unrewarded; and many who have settled in the west with lively feeling upon this topic, have abandoned this precarious source of profit.

For several days, I had been employed in crossing vast prairies. The weather continued moderate, the snow, water, and mud were deep, and wading laborious. I frequently met with considerable freshets, and the banks of the creeks were overflown. Here I saw vast flocks of wild geese flying towards Sandusky Bay. Their hoarse notes, proceeding from the misty air, rendered even more solitary a trackless and almost illimitable plain of high and coarse grass. I was repeatedly lost in these prairies; and found it necessary to calculate my way by compass and maps.

Within about twenty miles of the famous Black Swamp, I entered, late in the afternoon, a dark wood in a low and wet situation. The weather being moderate, I continued to travel until very late in the evening. About 12 o'clock at night my dogs contended with a herd of wolves and were both slain. The winter, until within a few days, having been very severe, the wolves, probably, were very hungry and ferocious. It is said, that in this part of the country they are very numerous and bold. From the manner in which the contest commenced, I am inclined to believe, that the wolves having issued from their dens, had come to feast themselves. Previous to the rencounter, all was perfect silence. My dogs were near me, and without the least noise, which I could perceive, the war commenced. It was sudden and furious.

I had, for hours, been experiencing a most excruciating tooth-ache; and my sense of hearing was considerably affected by it. But when the contest began, I, for a moment, forgot my infirmities, seized my gun, encouraged my dogs, and marched forth in the most lively expectation of achieving some great victory. It being, however, very dark, the bushes thick, and the voice of the battle beginning to die upon my ear, a sense of my sufferings returned, and I sought repose in my tent. But I found no repose there: the whole night was employed in endeavouring to assuage with gun powder and salt, the only applications in my power, an almost insufferable tooth-ache.

My dogs never returned from the strife. I had lost the faithful, and disinterested partners of my toil. I could not leave so interesting a place. For two nights and one day I remained upon the spot;—but for what I do not know. In the listlessness of sorrow I fired my rifle into the air. At length I realized, that my dogs had fallen nobly; and the sentiments of grief found a solace in the dictates of pride.

As the fate of my dogs is interesting I may be permitted to spend a moment in their praise.

They were not, like the hounds of Sparta, dewlaped and flew; but they possessed the acuteness of these, with the courage of the mastiff. They were very large, and accustomed to the strife of the woods. Tiger was grave and intrepid. Small game excited in him no interest; but when the breath of the foe greeted him in the breeze, he surveyed, at a glance, and with a lofty aspect the surrounding wood. Slow, steady, and firm in pursuit, he remained silent until the object of his search was found; and then, a cry more terrible than his

> "Was never hallooed to,
> Nor check'd with horn in Crete or Thessaly."

He had lost an eye in the battles of mountains, and was, in every sense of the word, a veteran.

Pomp was active, generous, affectionate, and in courage and perseverance unrivalled. In the night, it was his custom to pillow his head upon his master's breast; and he ever seemed concerned to guard him from the dangers of an unsheltered repose.

Perhaps too I may here notice some traits in the character of the wolf. The countenance of this animal evinces both cunning and ferocity. The length of his body is generally about four feet, the legs from fifteen to eighteen inches, the circumference of the body from two and a half to three feet, and the tail sixteen inches in length. The colour of the wolf is a mixture of light and brown with streaks of grey. His hair is long, rough, and very coarse; his tail is bushy, something like that of the fox, his body is generally gaunt, his limbs are muscular, and his strength very great; with perfect ease he can carry a sheep in his mouth.

The cunning and agility of this animal are equal to his strength; and his appetite for animal food is exceedingly voracious;—so much so, that he often dies in pining for it. When his hunger is very imperious, even man becomes the object of his ferocity. His sense of smelling is so acute, that at the distance of three leagues, a carcass will attract his attention. The wolf is a very solitary animal; and never associates with his species but for the purpose of attacking a human being, or some animal of which he is individually afraid; and when the object of the combination is effected, each retires sullenly to his den.

It appears by the early stages of English history, that wolves in England have been so formidable as to attract the particular attention of the king; and even as late as Edward the first, a superintendant was appointed for the extirpation of this dangerous and destructive animal.

I may add that not long after the loss of my dogs I reached, just before night, a solitary log hut; and in about an hour after a wolf howled at the door.

Evans' Tour.

GAME IN OLDEN TIMES.

Mr. Coke, the 7th of October, 1797, upon his manor at Warham, and within a mile's circumference, bagged forty brace of partridges in eight hours, at ninety three shots; every bird was killed singly. The day before, on the same spot, he killed twenty-two brace and a half, in three hours. In 1801, this gentleman killed, in five days, seven hundred and twenty-six partridges.

In January, 1803, Mr. Coke, Sir John Shelly, and Mr. T. Sheridan, went over to Houghton, in Norfolk, on a *Chasse* for their friend lord Cholmondeley, and killed there, only with their three guns, in one day, fourteen brace and a half of hares, sixteen couple of rabbits, twenty-four brace of pheasants, thirteen brace of partridges, and sixteen couple of woodcocks. However great and surprising this shooting may appear, it is nothing to what has been done in Germany, and Bohemia, of which I shall only give one instance, copied from *Mons. Dutens, Itineraire*, Edit. 1793, p. 153: "Game is in such abundance in the kingdom of Bohemia, that in the year 1753, the Emperor, Francis I. made a *partié de chasse*, of twenty-three sportsmen, to go with him on a shooting excursion, to one of the estates of Prince Colleredo: in the space of eighteen days, the imperial sportsmen fired 116,209 shots, and killed 19,545 partridges; 18,243 hares; 9,499 pheasants; with other inferior game, amounting to 47,950. I had the anecdote from the Prince Colleredo himself."

These exploits in shooting, seemed admirably calculated, not only to deafen the operator, but to severely beat his shoulder, almost to pieces; when we consider that every fowling-piece requires to be washed, at every twenty discharges at least, and the operation is performed, we are lost in amazement at such an extraordinary occurrence.

Thornhill.

ANECDOTE OF YOUNG FOX CUBS.

About two months ago two very young fox cubs were accidentally caught at the Bar hill, and conveyed to the game keeper, Myers' romantic residence in the Deer Park, Cally. A day or two afterwards the Stewartry huntsman, whose sole business is to destroy vermin, not to observe the laws of the chase, while beating the cover near Disdow, started an old she fox, which was speedily shot by our friend Mr. Myers.

As it was obvious the animal had been giving milk, search was made, and two more cubs found, one of which was so tiny that it shortly after died. But its twin brother, or sister, survived, and was placed on a good bed of straw at the bottom of a half-hogshead, along with the two juvenile Reynards already mentioned; and there the trio, by dint of good nursing, and with such recreation as they furtively secured, have lived very comfortably ever since. About the time alluded to, Mr. Myers had a small black bitch, whose pups had been drowned, and, as he was anxious to preserve the young foxes, he determined to try whether the animal would suckle the nurslings of her natural enemy—an experiment which succeeded to admiration. The moment "Pepper" or "Mustard," we forget which, was introduced to the importation from the hill-side, she commenced licking them all over, and, in the course of a few hours, displayed more fierceness in guarding them from real or supposed harm than ever she did in defence of her own offspring. Under such kind nursing they throve so well that they are already as big as their foster parent; but of late, we believe, they have been fed with rabbits, and their nurse, for the sake of her own health, kept apart from them during the day. The half-hogsheads are furnished with a lid, on which is placed a stone to keep it down; but, in spite of these precautions, the bitch has repeatedly knocked the top off, and, after dragging the cubs out of the barrel, led the way to the neighbouring woods, that they might enjoy air, exercise, and recreation. When followed, she answers to her master's call, and, when coaxed to return home, emits a peculiar cry, hovering between a bark and a howl, that immediately brings their foxships around her. The said cubs, with which so much pains have been taken, are to be presented by and bye to a friend of ours, an ardent lover of the pleasures of the chase, and who has long been anxious to stock Annandale well with foxes, *maugre* the welfare of the "woolly people." We, of course, quarrel with no man's taste, notwithstanding of Andrew Fairservice's saw anent "land louping for days after a bit beastie that will no weigh six pund when ye catch't;" but this we may predict very safely, that the foxes, when they are old enough, will evince their gratitude by helping themselves to a tithe of his lambs on the hill, and more than a tithe of his good lady's poultry.

Dumfries Courier.

PIGEON MATCH.

A shooting match at Pigeons was decided on the 15th of July, at Germantown, between Doctor S. and Mr. L. for fifty dollars a side, at ten birds each, and was won by the former gentleman, he having killed his ten birds—and the latter nine, missing the first bird.

Another match occurred on the same day and place, with several on a side, but we have not been able to procure a statement of the shooting.

on Stone by T. Doughty

ARGALI.

AMERICAN ARGALI.

OVIS MONTANA.

[Plate XVII. Male and Female.]

White Buffalo.—Mackenzie, Voyages. *Mountain Ram.* M'Gillivray.—New York Med. Repos. vol. vi. *Big Horn.*—Lewis and Clark. *Ovis Montana.*—Desmarest, Mamm. Cuvier, Reg. an. Richardson, Faun. am. bor. *Ovis Ammon.*—Godman. Harlan. *Ovis Ammon var Pygargus.*—Griffith, An. King. *Rocky Mountain Sheep.*—Warden. Unit. St.—Philadelphia Museum.

No part of natural science is environed with greater difficulties, or presents more obstacles to the inquirer, than the history of those animals which have been the companions and slaves of man from the earliest ages; this is strongly exemplified in the Sheep, whose almost innumerable varieties are to be met with in every civilized portion of the globe. In the investigation of this subject many questions of importance arise, which have no inconsiderable bearing on the issue, though from the present state of our knowledge, it is impossible to solve them in a satisfactory or undeniable manner. Some of these have been thus noticed in a late work.* "The first relates to the propriety of the generic distinction between the Sheep and Goats, which naturalists have borrowed from the vulgar classification, adopting it in many instances contrary to their own better judgment. The second has reference to the specific differences supposed to exist between the three or four distinct races that have been found in a state of nature, and to the claims which they severally possess to be regarded as the originals of the domesticated breeds."

It is true that a comparison of the domestic varieties of these animals, exhibits many striking differences tending to confirm the generic distinctions which have been established by naturalists; but when this investigation is extended to those species which are still found in a wild and unreclaimed state, it becomes almost impossible to determine to which genus many of the animals belong. There is so great a similitude existing between their habits and mode of life, as well as in their external form and anatomical structure, that it appears wholly superfluous to class them under different heads. Thus, their horns are constituted of the same hollow, angular sheaths, supported by bony prominences, having cavities communicating with the frontal sinuses, the form, number, and character of their teeth are identical, they both have the same narrow and elongated muzzle, without the naked space surrounding the nostrils, so well marked in many of the ruminantia, and lastly both genera are destitute of the lachrymal openings and brushes on the knees, so generally to be met with among the antelopes and deer. In fact, the only real generic difference between, as given by Baron Cuvier, consists in the direction of the horns—these appendages, in the Sheep, being "directed backwards and returning more or less forward, in a spiral manner," whilst in the Goats, the horns "are directed upwards and backwards;" as regards the absence of the beard in the Sheep, it cannot be assumed as a characteristic mark, as this is also the case in some species which are classed among the Goats. The learned naturalist just quoted also adds, they (the Sheep) little deserve to be generically separated from the Goats, as they produce prolific hybrids with them.

But a still more debateable question arises as respects the different races of the Sheep which are yet found in a wild state. On the one hand, it would be an extraordinary anomaly in the laws which regulate the geographical distribution of animals, if, as was formerly supposed, the wild Sheep found in the mountains of Africa, the great chain extending through central Asia, and the elevated regions of various parts of the American continent, be admitted as belonging to the same species, whilst on the other, when we advert to the slight shades of difference existing between them, and their close resemblance in every important particular, strong doubts may be reasonably entertained, of the propriety of separating them from each other.

Before, however, entering on the history of the subject of our present illustration, we shall pursue the plan we have adopted in this work, and make a few observations on the genus Ovis.

To none of the domestic animals is mankind more indebted for the comforts and luxuries of civilized life than to this quadruped; others may excel it in strength, speed, and dignity of character, but were we to be deprived of the services of any of our attendants among the inferior animals, we would in all probability find that those of the Sheep would be as severely felt as any of the others. The inoffensive and mild character of these animals, when under the control of man, is so well known as to have descended into a proverb. But when ranging in flocks over the extensive tracts devoted to them in many countries, and where they seldom depend on the aid of the shepherd, they display very different characteristics. Here, being obliged to depend on their own resources, when threatened with an attack, they show a courage and resolution which is generally supposed to be foreign to their nature. Thus, a ram will boldly meet and drive off a dog or fox, and where the danger is more alarming, the whole flock unites for common defence, drawing up in a circle, placing the young and females in the centre, whilst the old males present an armed front to the

* The Gardens and Menagerie of the Zoological Society delineated, No. IX.

assailant that is not to be easily vanquished. In the mountainous parts of Wales, it is stated by Bingley,* "they do not always collect in large flocks, but graze in parties of from eight to a dozen, of which one is stationed at a distance from the rest, to give notice of the approach of danger. When the sentinel observes any one advancing, at the distance of two or three hundred yards, he turns his face to the enemy, keeping a watchful eye upon his motions, allowing him to approach as near as eighty or a hundred yards; but when the suspected foe manifests a design of coming nearer, the watchful guard alarms his comrades by a loud hiss or whistle, twice or thrice repeated, when the whole party instantly scour away with great agility, always seeking the steepest and most inaccessible parts of the mountains."

The ewe usually produces only one lamb at a time, though in a flock, it often happens that there are several instances where they have two, and in some rare cases even three at a birth. It is a remarkable peculiarity of this species of animals, that they drink but rarely and sparingly, their thirst being, in all probability, slaked by the juices of the vegetables on which they feed, and the dew or rain by which the herbage is moistened.

Sheep, like other domestic animals, appear to become subject to many diseases, which, if not totally wanting, are at least very rare among them in the wild state. Water often accumulates in their head; this disease, which is termed the *dunt*, is almost invariably fatal; they are also affected with an extraordinary species of mortification, called *foot-rot*, this will spread through a whole flock, and produce great devastation; they are likewise liable to a variety of other complaints, the most common of which is the *rot*. This is known by the dullness of the animal's eyes; livid hue of the gums; the sorder on the teeth; the fetor of the breath, and by the ease with which the wool, and in the latter stage of it, even the horns may be detached. The origin of this disease is not clearly understood, the prevailing opinion, however, is that it is owing to feeding Sheep on wet or moist grounds. Sheep are very obnoxious to the attacks of certain insects; thus, one of the species of gad fly is very troublesome, and even dangerous, by depositing its eggs in the nose, the larva from which breed in immense numbers in that cavity, and in the frontal sinuses; they are also subject to these larva in the skin, as well as to ticks and lice. The ordinary life of the Sheep, is from twelve to thirteen years.

The benefits which this amimal bestows on mankind are exceedingly numerous. Its horns, its flesh, its tallow, and even its bowels, all furnish articles of great utility. The horns are manufactured into various articles, as spoons, buttons, cups, &c. The flesh is too well known, as one of our most valuable meats, to require notice. The manufacture of its wool into cloths has long formed the principal source of wealth to England, and, in all probability, will become equally so in this country. The skin, is prepared into leather, for inferior kinds of shoes, for the coverings of books, for gloves, and into parchment. The entrails, by a proper preparation, form those strings for musical instruments known under the name of catgut. The bones are employed for a variety of purposes in the arts. The milk has more consistence than that of the cow, but is embued with a rank taste; the cheese made from it, though rich, is necessarily strong.

The domestic varieties of the Sheep are exceedingly numerous; besides the minor distinctions which have originated from breeding, there are some peculiar to different countries that deserve notice. The Spanish, or merino, which are remarkable for the fineness of their wool, and the form of their horns, are supposed, by some authors, to have originally been introduced into Spain from England. The African presents a curious instance of the effects of a tropical climate. The form of this variety is meagre, their legs are long, their ears pendant, and the covering of the body has so much of the dryness and crispness of hair, that it can scarcely be considered as wool.

The Wallachian is remarkable for large spiral horns; this variety has spread through the different islands of the Mediterranean Archipelago, and is also frequent in Austria and Hungary. The northern regions of Europe afford a variety, distinguished by having their heads furnished with three, four, and more horns. But the most striking discrepancy is found in a race inhabiting the Barbary coast and some parts of Asia; these animals resemble the common Sheep, except in the unnatural dimensions of the tail. This is of a square or round form, like a cushion, and attains the weight of thirty pounds, rendering it, it is said, so great an incumbrance to the animal, that it is often found necessary to support it by a kind of small cart.

The Sheep of Bucharia are also considered by Linnæus, as a marked variety. It is from these animals that the Persians derive one of their celebrated articles of luxury. The lamb skins of Bucharia, which form part of the dress of every one that can afford it, in Persia, are chiefly procured from lambs, taken from ewes killed during the period of gestation. They have a glossy and fur like texture, and are usually of a gray or black colour.

The last variety we shall notice, is the Tartarian; this is distinguished by having no tail, and from the immense size of its rump, which appears like a large tumour, and weighs as high as forty pounds. The Sheep themselves are also of

* Animal Biography.

a proportionate magnitude, their voice resembles rather the lowing of a calf than the bleating of a Sheep. They are remarkably prolific, usually producing two, and not unfrequently three at a birth. The varieties usually raised in the United States, are the various English kinds and the merino, with the various crossed breeds between.

As we have already observed, the wild races approximate so very closely to each other, as to render it doubtful whether they may not be identical, and the slight differences between them be merely owing to change of locality. They were all included, by Linnæus, under the specific name of *ammon*, in which he has been followed by many recent naturalists. To bring the whole matter before our readers, we will, therefore, give a short sketch of each of the species, as admitted by Baron Cuvier, in his last edition of the *Regne Animal*, before speaking of that inhabiting this country. The Siberian Argali, (*O. ammon,*) which is found in a great part of northern Asia, is distinguished by horns situate on the summit of the head, which at first rise upright, then bend backwards, and finally twist outwards and upwards, these horns are triangular at their base, rounded at the angles, flat on the interior side, and deeply striated transversely. The head resembles that of the common ram, with, however, smaller ears; it is nearly the size of a small stag; the fore legs are shorter than the hinder; the tail is very short and white tipped with yellowish. The hair of the body is very short in summer, and of a yellowish colour, mixed with gray. In winter it acquires a greater length, and becomes of a feruginous gray, with white at the muzzle, throat, and under the belly. At all times it has a lighter spot of colour around the root of the tail. The favourite resorts of this species are the mountainous districts of Siberia, Kamschatka, &c. They are gregarious, though the flocks are small. They form the principal food of the inhabitants of those dreary countries. They are shot with firearms, or with bows, sometimes with cross-bows, placed in their paths, and discharged by their treading on a string communicating with the trigger. They are so swift, that, when chased by dogs, they leave their pursuers far in the rear, though from these animals driving them to situations in which they are exposed to the aim of the hunter, it is a favourite mode of chasing them.

The Corsican or Sardinian Argali, (*O. murimon,*) is the species spoken of by Pliny, under the name of *murmon*. They are termed *Mufri* by the Corsicans, and inhabit the highest parts of the island. They can only be shot or captured by stratagem. They feed on the most acrid plants; their flesh, though lean, is highly esteemed; the skin is thick, and is employed as a hunting shirt, to defend the body against the thorns and briars in passing through thickets. From the accounts of some early British writers, it would prevails on the anterior aspect of the legs. The tail is dark appear as if this species had once inhabited Scotland. Hector Boetius speaks of a Sheep in St. Kilda, the description of which agrees with this animal, added to which a figure of one was discovered in a piece of sculpture taken from the wall of Antoninus, near Glasgow. The Corsican Argali only differs from the Siberian, in not being as large, in the female rarely having horns, and those very small.

The American species is very closely allied to the Siberian, if not identical with it, the only difference being, that it is a larger animal, and that its horns form a more spiral curve. Unfortunately we are but little acquainted with the habits and peculiarities of this animal; the following account if it is principally derived from Dr. Richardson, whose excellent work on the quadrupeds of the northern parts of America, we have so frequently drawn upon for information.

"Size much greater than the largest sized varieties of the domestic Sheep. It is bigger than the Argali."

The horns of the male are very large, arise a short way above the eyes, and occupy almost the whole space between the ears, but do not touch each other at their bases. They curve first backwards, then downwards, forwards, and upwards, until they form a complete turn, during the whole course of which, they recede from the side of the head in a spiral manner. They diminish in size rapidly towards their points, which are turned upwards. At their bases, and for a considerable portion of their length, they are three sided, the anterior or upper side being, as it were, thickened, and projecting obtusely at its union with the two others. This side is marked by transverse furrows, which are less deep the further they are from the skull; and towards the tips the horns are rounded, and but obscurely wrinkled. The furrows extend to the other two sides of the horn, but are there less distinct. The intervals of the furrows swell out, or are rounded.

The horns of the female are much smaller, and nearly erect, having but a slight curvature, and an inclination backwards and outwards.

The ears are of a moderate size; the facial angle straight, and the general form of the animal rather elegant, being intermediate betwixt that of the sheep and the stag. Tail very short. The hair like that of the rein deer, being, on its first growth in the autumn, short, fine, and flexible; but as the winter approaches, becoming much coarser, dry, and brittle, though at the same time it feels soft to the touch. In the latter season the hair is so close at its roots, that it is necessarily erect. The legs are covered with shorter hairs.

The head, buttocks, and posterior part of the belly white; the rest of the body and the neck of a pale umber, or dusky wood brown, colour. A deeper and more shining brown

brown, and a narrow brown line, extending from its base, runs up betwixt the white buttocks, to unite with the brown colour of the back. The colours reside in the ends of the hair, and as these are rubbed off, during the progress of the winter, the tints become paler. The old rams are almost totally white in the spring."

One of the first accounts we have of the Argali being found in America, is given by Father Piccolo, who established a mission in California, in 1697, about two centuries after the discovery of America, he says "Two sorts of deer are found here that we know nothing of; we call them sheep, because they somewhat resemble ours in make. The first sort is as large as a calf one or two years old; its head is much like that of a stag, and its horns, which are very large, are like those of a ram; its tail and hair are speckled, and shorter than a stag's; but its hoof is large, round, and cleft as an ox's. The other sort of sheep, some of which are white and the others black, differ less from ours. They are larger, and have good deal more wool, which is very good, and easy to be spun and wrought." This description of the Californian animal was followed by those of Hernandez, Clavighiero, and Vanegas, the latter of whom gives a figure which, though defective, is evidently meant for an Argali; he states that it is about the bigness of a calf a year and a half old, which it greatly resembles in figure, except in its head, which is like that of a deer; this author agrees with Piccolo, in saying that its skin is spotted. From this it would appear, that the Californian animal, though an Argali, is different from the species under consideration, which is never so, according to the recent authors who have spoken of it; in fact Mr. Douglass has described it under the name of *O. californica*.

Although many skins were sent to Europe by the fur traders, and the existence of a quadruped of the sheep kind among the high lands of western America was not denied; the first clear history of it, is owing to Mr. D. M'Gillivray; this will be found in the 6th vol. of the New York Medical Repository, with an indifferent wood cut. This gentleman also sent a specimen to New York, where it remained for some time, in the Museum of Mr. Savage, and was afterwards, it is stated by Dr. Richardson, transmitted to France, and a description and figure of it inserted in the *Annales du Museum*, by M. Geoffroy.

Some time after this, Lewis and Clark procured specimens of both male and female, which are now in the Philadelphia Museum. From these our present illustration is partly taken, though from the decayed and discoloured state of them, we have also availed ourselves of Landseer's sketch, (from individuals in the Museum of the Zoological Society of London,) contained in Richardson's fauna. It may be well to mention, that the figures in Griffith's Animal Kingdom, and Godman's Natural History, were also drawn from Lewis and Clark's specimens. The last account we have of this interesting animal, is furnished, as beforementioned, by Dr. Richardson.

The American Argali inhabits the mountainous regions of country situated in the western part of North America, not occurring further eastward than the delivity of the Rocky mountains. They generally frequent the highest parts of this chain which produce any vegetation, but sometimes descend to feed in the valleys, though on the least alarm, they fly for shelter to their native precipices, where the hunter finds it difficult to follow them. Mr. Drummond informed Dr. Richardson, that in the retired parts of the mountains, where they had seldom been alarmed by hunters, that he found but little difficulty in approaching them; though in spots where they had been often fired at, that they were extremely shy, alarming their companions with a hissing noise, like the Chamois.

They assemble in flocks consisting of various numbers, though seldom exceeding thirty, the young rams and the females hording together in the winter and spring. The female brings forth in June or July, when she retires with her young to the most inaccessible situations.

Mr. M'Gillivray says, the appearance of this animal, though rather clumsy, is expressive of great activity and strength, and his agility in traversing the rugged and almost impassable spots he inhabits is truly surprising, bounding from rock to rock, like the Ibex. "Frequently," he continues, "I have been entertained with a view of one of them, looking over the brink of a precipice several hundred yards above my head, scarcely appearing bigger than a crow, and bidding defiance to all approach. These frightful situations are quite natural to them. They run up declivities of hard snow or rough ice with facility. Pursuing them in these situations, I have been obliged to cut steps with my knife, where they passed without difficulty. Sometimes you think their progress is stopped by a chasm or projecting rock; but if you attempt too near an approach, at one bound they are out of your reach."

Their favourite places of resort are the grassy knolls, situated amidst craggy rocks, which serve them as retreats when pursued by an enemy. Mr. Drummond also states, that they are accustomed to pay daily visits to certain caves in the mountains, which afford a saline efflorescence, of which, like most other ruminating animals, they are very fond.

All those who have eaten of the flesh of these animals, particularly of the female and young male, agree that it is extremely delicate, and preferable to the finest venison; even the Indians, who live entirely on animal food, may be supposed epicures in the choice of flesh, agree that the flesh of the Argali is the sweetest feast in the forest.

No. 1.

No. 2.

Notes of a Naturalist. By JACOB GREEN, M. D.

INDIAN ANTIQUITIES.

IN the early part of June (1831,) I passed a day or two at Wheeling, in Virginia. My visit was rendered exceedingly interesting, by the examination of some of those curious objects of antiquity which are among the few wrecks of the history of the former inhabitants of our country, and are certainly the work of a people much farther advanced in the arts, and greatly superior in power and civilization to the rude Indian tribes which now inhabit our western regions. These vestiges of the arts and manners of our aborigines are gradually disappearing, and, at no very distant period, the American antiquary will have to lament, that his predecessors, in this curious field of inquiry, did not rescue from oblivion more of these remarkable relics.

There appears to have been no ancient fort, camp, or military work in the immediate vicinity of Wheeling, but on the western bank of the Ohio river, on the site of this flourishing town, there was once a village, a place of public worship, or perhaps merely the habitation of some distinguished chieftain.

A few years since, a little to the north of the town, a *hearth* or fire place was discovered, not many yards from the bank of the river, and about four feet below the surface of the ground. The floor of the hearth was composed of large flat stones, and was strewed with pieces of charred wood and with ashes. There were no bricks,* or any earthen ware found near the place. This spot, I concluded, must either have been an *altar*, where religious rites were performed, or a *hearth* for the ordinary culinary operations of a family.

Some distance to the south of this altar or hearth, was the place of burial or *cemetery*. This was first noticed some years ago, by my friend, Dr. J. W. Clemens, an intelligent physician and a zealous antiquary, now residing in Wheeling. He informed me, that some workmen, while digging a cellar for him, in one of the principal streets of the town, observed a number of human bones, and some fragments of earthen ware. On offering them a small premium, they succeeded in getting out of the *tumulus*, three or four small earthen vessels, and a number of arrow heads, stone axes, and rude ornaments of clay; enough of the skeleton was also ascertained, to convince Dr. Clemens, that it was buried in a sitting attitude. Two of the earthen vases, or urns, I had the pleasure of examining. One of them is in the possession of a gentleman in Wheeling, and the other is now deposited in the Lambdin Museum, at Pittsburg, Pa. They were all nearly of the same figure and capacity, and would contain about one quart. Figure 1, of the accompanying sketch, is an accurate drawing of the vase in the Museum. It differs from the others, in being ornamented on the outside near the brim, by a line of bead-like protuberances; the others were entirely plain. The symmetrical proportions of these vessels, and the smooth surface they present, renders it highly probable that they were formed in a lathe, in the same manner as potters ware is now modelled. The inside of the urns appears to have been blackened either by smoke, or the articles which they contained. The composition of which these vessels are made, is a mixture of talcose earth, clay, and pounded muscle shells, the unios of the Ohio river. They are without glazing, and have not been burned in a kiln, as our common earthen ware, but

* I saw part of a brick found some miles further down the river. Its surface was fluted, some mould being impressed upon the clay before it was burnt.

merely hardened by exposure to the sun and air, for by minutely examining these shells mixed with the clay, they werenot in the smallest degree calcined; in most cases the *nacre* of the shell is quite pearly and glittering. They are capable of supporting, however, a high temperature, for Dr. Clemens boiled water in one of them.

There is a delicacy, perfection, and symmetry in most of the earthen vessels, found in the ancient tumuli of the west, which cannot be observed in any of the other articles which are usually disinterred along with them. The stone axes, arrow heads, and other implements are often of the rudest construction. From this circumstance I think it probable, that the females, or the priests, or those whose ordinary occupations confined them at home, were the ancient American potters, and that the other articles were fabricated by men engaged in the bustle and business of war, or in the pursuits of the chase. In the Philadelphia Museum, however, there are some very curiously wrought instruments of stone, and among the rest a kind of tomahawk, made from a beautiful mass of translucent quartz. Perhaps this instrument was made and used by the priests, to immolate their victims.

Dr. Clemens informed me, that two of the above vases, when first discovered, were filled with the bones of some small quadruped, and as far as he could identify the crumbling fragments, they were those of the *rabbit* or *squirrel*. They were deposited by the side of the deceased, that he might have, according to a traditionary superstitious notion, something to eat at the resurrection or reanimation of his body. This story, I have no doubt, is the invention of the present race of Indians, who now inhabit our western wilds. It has been the usage of many ancient nations, an usage which is, even now, scarcely obsolete, to bury in the same grave some symbol of the favourite amusement or occupation of the deceased. Thus, with the bones of the warrior, a battle axe will often be found, or perhaps his arrows and bow. Mr. Atwater, the indefatigable antiquary of Ohio, remarks, "that with the hunter is often interred, that kind of wild game of which he had been the fondest, or the most successful in taking. Hence, the teeth of the otter are found in the grave of one, and those of the beaver in that of another." One who had been successful in fishing, is distinguished by a number of fish bones and muscle shells. If these opinions be correct, the ancient American, whose skeleton was found at Wheeling, must have been a famous hunter of the squirrel, or the rabbit.

In the transactions of the American Antiquarian Society, vol. i. page 227, there is the sketch of a vase very much resembling the one we have given at figure 1, but it is more globose, better proportioned, and more highly finished; it was obtained in a mound, a few miles from Chilicothe. Dr. Hildreth, of Marietta, has also described a vessel, "nearly in the form of a cocoa nut shell," with four neat handles near the brim, opposite to each other; it was found in the bank of an island, not far from Belpre. These vessels seemed to have contained calcined human bones, and from their dark appearance, oil seems to have been poured into them along with the bones. In Pennant's Tour in Scotland, vol. i. plate 21, there is the representation of a fine urn, discovered in a cairn or mound, near the town of Banff. This vase is thought by Mr. Atwater, to resemble the one found near Chilicothe, and which is so much like our figure 1; but the likeness, in my estimation, is exceedingly remote. Yet though there is little similarity in the shape of these vessels, a variety of circumstances connected with them, intimate a great resemblance between the manners and customs of the people, by whom they were manufactured and used. That the sepulchral rites of the early inhabitants of Scotland, were very analagous to those of the ancient tribes of Americans, who lived near Wheeling, must strike every one who reads Pennant's account of the urn of Banff. "It was discovered in a cairn or tumulus, in a coffin of flat stones; it was ornamented, but round it were placed three others, smaller and quite plain, the contents of each were the same, ashes, burnt bones, and flint arrow heads. There was also in the larger urn and one of the lesser, a small slender bone, four inches long, apparently not human, but the animal to which it belonged, and the use were unknown. The materials of the urn, consist of a course clay, mixed with small stones and sand, which have evidently been only dried and not burnt; the inside of the larger urn was blackened, probably with the oil from the bones." This is the substance of Pennant's account. It will be recollected, that at the cairn at Wheeling, *one* ornamented urn and several plain ones were found, and that in several other particulars, that burial place resembles the one above described.

Figure 2 of our drawing, represents an earthen ware bottle, found in Scott county, state of Mississippi, twenty feet below the surface. The clay is much purer, and the workmanship far superior to the Wheeling urns. It is of a dark umber colour, and was brought from the tumulus by my friend, Mr. S. of Pittsburg, and given to the Museum. In examining the smooth and polished surface of this beautiful vessel, it is scarcely possible to resist the inference that it was moddled in a potter's lathe. The drawing made of it, by the kindness of Mr. Lambdin, a promising artist and the liberal proprietor of the Museum, will give a correct idea of its general appearance. It will contain about a quart. The clay and the shells of which it is composed, must have been thoroughly beaten and worked together before it was moulded.

It is difficult to conjecture to what use this antique bottle

was applied. It was most probably used in their burial ceremonies, or was in some way connected with their superstitious rites. I have seen some ancient Grecian lachrymatories, not very unlike it in figure; and perhaps the aborigines of the west, employed this vessel to gather the tears in honour of the dead. On the upper part of the body of the vessel, there are four representations of the head of some quadruped. When I first examined these rude specimens of sculpture, I supposed, that the head of the animal intended by the artist, was that of the hog. The head of the *Sus tajassu*, or Mexican hog, cut off square, was found a few years ago, in a good state of preservation, in one of the saltpetre caves of Kentucky. Dr. Drake's notice of this curious circumstance, which I have just read, confirms this opinion; though an ingenious friend has supposed, that the head carved on the vase, was that of the bear. The head mentioned by Dr. Drake, seems to have been preserved with superstitious care, with the same intent, probably, that the ibis and the beetle were embalmed by the Egyptians.

That bottles ornamented with various devices, were sometimes used by our aborigines, for idolatrous purposes, is quite certain, from the one found at Natchez, and now in the cabinet of the American Antiquarian Society, and also from the three headed bottle, discovered in a mound, on the Cumberland river. These heads are supposed by Mr. Atwater, to represent the three principal idols of India, Brahma, Vishnoo, and Siva. He, therefore, is of opinion, that the authors of our ancient works in the west, originated in Hindostan. These works, we know, are located near our principal rivers. "To the consecrated streams of Hindostan, devotees assembled from all parts of the empire, to worship their gods, and to purify themselves by bathing in their sacred waters. In this country, the sacred places of the aborigines were uniformly on the bank of some river, and who knows, but that the Muskingum, the Scioto, the Miami, the Ohio, the Cumberland, and the Mississippi, were once deemed as sacred, and their banks as thickly settled and as well cultivated, as are now, the Indus, the Ganges, and the Burrampooter." J. G.

THE GOLDEN EAGLE.

FALCO CHRYSAETOS.

In symmetry, in strength, in the vigour of her wing, the acuteness of her vision, and the terrible clutch of her talons, the Golden Eagle is superior to every other bird; and as her habitation is always in those time-built palaces, the most lofty and inaccessible precipices, there is sublimity in her dwelling; and though in reality a long-lived bird, she has popularly gained a sort of immortality, from the durable nature of her abode. It appears to be one of the general provisions of nature, that the most powerful destroyers of living animals should have their favourite haunts in the most lonely places; and in this, the lion, the most powerful of quadrupeds, and the Golden Eagle, the most vigorous of birds, completely agree. There is, however, a wonderful difference in the distances at which they can discover their prey: the lion springs only a few yards, while the eagle darts down from the mid-heaven, in one perpendicular and accelerating stoop.

The Golden Eagle is among the largest as well as the most powerful of birds. Specimens have been found, measuring nearly four feet in length, and about nine feet across the wings, when they were fully extended. Specimens of much larger dimensions have also been seen, one of which was shot at Warkworth, measured eleven feet three inches from the tip of the one wing to that of the other, and weighed eighteen pounds. Probably large specimens were more abundant formerly, when the wild countries were left freer to their range than they are now. The average dimensions may be taken at three feet long, and seven feet and a half in expanse, in the male; and three feet and a half long, and eight feet in expanse, in the female. This great extent of wings, makes these when folded as long as the tail. Considering its breadth and strength, the Golden Eagle is not a very heavy animal, the average weight being about twelve pounds for the male, and fifteen for the female. The figure is, however, compact, and the parts admirably balanced; and both the individual parts and the general arrangement and symmetry, are indicative of great strength. In order that the powerful muscles and tendons by which the talons are moved may be protected from the weather, the *tarsi*, or feet-bones of the Eagle are closely feathered, down to the very division of the toes. The general colour of the toes, is yellow; they are defended above by horny plates, or scales, of which there are only three on the last joint of each toe, and they are furnished with talons, which are strong, black, sharp, and very much hooked. So admirable is the mechanism by which the toes and talons of the Eagle are moved, that a dried foot may be made to act powerfully by pulling the tendons, long after it has been dead; and the tendons themselves are among the toughest of natural substances. There is considerable dignity in the repose of the Eagle; she usually sits upon a pinnacle of rock, where she can command an extensive view; and the head is often recurvated, so that one eye is directed to the front, and the other to the rear. The knobs on the under part of the toes prevent any injury from the roughest rock, and take a firm

hold of the most slippery: so that the Eagle on her two feet seems as firmly based as most quadrupeds do on four. The hold which she thus takes of the surface, and the powerful action of the muscles that move the toes, give her another advantage; for by those combined powers, she can throw herself with a bound into the air, at the same time that she expands her wings, and thus, contrary to the vulgar belief, rear usually from level ground. When, however, the Eagle has been feeding in any other place than near her abode, she shows an unwillingness to rise. As she is so constituted as to be able to bear hunger four or five weeks, her feeding is voracious in proportion; and as, notwithstanding that she shows considerable adroitness in plucking birds, and skinning quadrupeds, she always swallows, more or less, of the indigestible *exuviæ*, as well as the bones of the smaller prey, her meal is heavy. This, in all probability, has given rise to the vulgar opinion.

The following description of the adult female, given in Selby's admirable work on "British Ornithology," is accurate:—Bill bluish at the base, the tip black. Cere, (the naked skin at the base of the bill,) lemon-yellow. Irides, orange-brown. Primary quills, black, the secondary ones, clouded with hair-brown, broccoli-brown, and umber-brown. Crown of the head, and nape of the neck, pale orange-brown; the feathers occasionally marginated with white, narrow, elongated, and distinct. Chin and throat, dark umber-brown. Vent, pale reddish brown. Tail, pale broccoli-brown, barred with blackish brown, and ending in a broad band of the same colour. Tarsi, clothed with pale reddish-brown feathers. Toes naked, yellow. Claws black, very strong, and much hooked

In the young bird, the irides of the eyes are not so yellow; the back and coverts of the wings are of a deeper brown; there are some white feathers on the breast and belly; the inside of the thighs are white; the feathers on the tarsi, white; the feathers of the wings, white at their bases; and the tail, white, for a part of its length from the root, which becomes less at each successive moulting. These distinctions diminish till the fourth year, when the bird arrives at its full size; they are then lost, and the age cannot be known for a number of years. The story that is usually told about the Eagle renewing her age, is of course without foundation, though it probably relates to the moulting or change of the feathers, which happens to the Eagle as well as to other birds.

Though the Golden Eagle, as found in England, be perfectly untameable, there is a constant sexual attachment in the race. The greater number of other birds pair only during the breeding season, and become indifferent to each other after the young can subsist by themselves; but the nuptials of the Eagle are for life. After a male and female have paired, they never separate, or change their abode, and rear all their successive broods in the same nest, which being made of strong twigs five or six feet long, firmly wattled and placed in some fissure or hollow of an abrupt rock, is supposed to last for centuries with only additional repairs. The pair, though they drive off their young, and, indeed, every creature but man, whose haunts they shun, are closely associated together: when the one is seen for any length of time, the other is sure not to be far distant; and the one may often be seen flying low and beating the bushes, while the other floats high in air, in order to pounce upon the frightened prey.

The time that they live, has not been accurately ascertained; but their longevity must be very great. In their strength they are proof against the elements, for the strongest gale does not much impede their motion; and their powers of endurance enable them to sustain very great casualties in respect of food. In many parts of Scotland, where they are much more numerous than in England, there are pairs that have nestled in the same cliffs, beyond the memory of the inhabitants. One of these places is Lochlee, at the head of the North Esk in Forfarshire. That lake lies in a singular basin, between perpendicular cliffs on the north, and high and precipitous mountains on the south. A pair of Eagles inhabit each side, so that three may sometimes be seen floating in the air at once; but those that have their abode in the inaccessible cliffs on the north, seem to be lords of the place, as the south ones do not venture to beat the valley while these are on the wing. Nor is it in their native freedom only that Eagles attain a great age; for there was one kept in a state of confinement at Vienna for one hundred and four years.

The female lays usually two eggs, which are supposed to produce a male and a female; sometimes she lays only one, and very rarely three. The eggs are of a dirty-white colour with reddish spots. The young are produced after thirty days' incubation. When they come out of the shell, they are covered with a white down; and their first feathers are of a pale yellow. They are exceedingly voracious; and the old ones, though they drive them from the eyrie as soon as they are able to shift for themselves, are, up to that period, equally assiduous in finding them food, and bold in defending them from attack. The vicinity of an Eagle's nest is usually indeed a scene of blood, as the prey, if not killed by the blow of the wing or the clutch of the talons, is carried to the ledge that contains the nest, and despatched there.

Of the boldness of the Eagles at that time, many stories are told; and they are so universal, that there must be some foundation for them. When the old ones are at the nest, the boldest fowler dares not approach it, as one flap of the

wing will strike a man dead to the ground. Even when they are absent, an attack on their brood is far from safe, as they see so far, and can come so rapidly. An Irish peasant had discovered the eyrie of a pair of Eagles on one of the islands in the Lake of Killarney; and watching the absence of the parents, he swam to the island, climbed the rocks, made prize of the Eaglets, and dashing into the lake, made for the shore; but before he had reached it, and while only his head was above water, the Eagles came, killed him on the spot, and bore off their rescued brood in triumph. In the northern islands, where cormorants, gulls, and other aquatic birds breed in immense numbers, the Eagles commit terrible devastation among the young; though in these places the Sea Eagle is often mistaken for the Golden Eagle. They also attack full-grown deer, and even foxes, wolves, and bears; they generally fasten on the heads of the larger quadrupeds, tear out their eyes, and then beat them to death with their wings.

There are accounts of their carrying off infants in Britain; and in places farther to the north, they have carried off children a little more advanced. Instances of this are mentioned in Iceland, in the Faroe islands, and in Norway. In the parish of Nooder-hangs in the last country, a boy two years of age was carried off in 1737, though his parents were close at hand, and made all the exertions in their power to scare the spoiler; nor were they able to follow her to the place of her retreat. In Tinkalen (Faroe islands) a child was carried off, and the mother climbed the hitherto unascended precipice, but the child was dead. Ray mentions a case in the Orkneys, where the mother was more fortunate; and it probably is the foundation of the following tale, which appeared in Blackwood's Magazine for November, 1826, and which bears the exquisitely graphic stamp of Professor Wilson.

The Story of Hannah Lamond.—"Almost all the people in the parish were leading in their meadow-hay on the same day of Midsummer, so drying was the sunshine and the wind,—and huge heaped-up wains, that almost hid from view the horses that drew them along the sward, beginning to get green with second growth, were moving in all directions towards the snug farm-yards. Never had the parish seemed before so populous. Jocund was the balmy air with laughter, whistle, and song. But the treegnomens threw the shadow of 'one o'clock' on the green dial-face of the earth—the horses were unyoked, and took instantly to grazing—groups of men, women, lads, lasses, and children, collected under grove and bush, and hedge-row,—graces were pronounced, and the great Being who gave them that day their daily bread, looked down from his eternal throne, well-pleased with the piety of his thankful creatures. The great Golden Eagle, the pride and the pest of the parish, stooped down, and away with something in his talons. One single, sudden female shriek—and then shouts and outcries as if a church-spire had tumbled down on a congregation at a sacrament! 'Hannah Lamond's bairn! Hannah Lamond's bairn!' was the loud, fast spreading cry. 'The Eagles ta'en aff Hannah Lamond's bairn!' and many hundred feet were in another instant hurrying towards the mountain. Two miles of hill, and dale, and copse, and shingle, and many intersecting brooks lay between; but in an incredibly short time, the foot of the mountain was alive with people. The eyrie was well-known, and both old birds were visible on the rock-ledge. But who shall scale that dizzy cliff, which Mark Steuart the sailor, who had been at the storming of many a fort, attempted in vain? All kept gazing, weeping, wringing of hands in vain, rooted to the ground, or running back and forwards, like so many ants essaying their new wings in discomfiture. 'What's the use—what's the use o' ony puir human means? We have no power but in prayer!' and many knelt down—fathers and mothers, thinking of their own babies, as if they would force the deaf heavens to hear!

"Hannah Lamond had all this while been sitting on a rock, with a face perfectly white, and eyes like those of a mad person, fixed on the eyrie. Nobody had noticed her; for strong as all sympathies with her had been at the swoop of the Eagle, they were now swallowed up in the agony of eyesight. 'Only last Sabbath was my sweet wee wean baptized:' and on uttering these words, she flew off through the brakes and over the huge stones, up—up—up—faster than ever huntsman ran in to the death,—fearless as a goat playing among precipices. No one doubted, no one could doubt, that she would soon be dashed to pieces. But have not people who walk in their sleep, obedient to the mysterious guidance of dreams, clomb the walls of old ruins, and found footing, even in decrepitude, along the edge of unguarded battlements and down dilapidated staircases, deep as draw-wells or coal-pits, and returned with open, fixed, and unseeing eyes, unharmed to their beds, at midnight? It is all the work of the soul, to whom the body is a slave; and shall not the agony of a mother's passion—who sees her baby, whose warm mouth has just left her breast, hurried off by a demon to a hideous death—bear her limbs aloft wherever there is dust to dust, till she reach that devouring den, and fiercer and more furious far, in the passion of love, than any bird of prey that ever bathed its beak in blood, throttle the fiends, that with their heavy wings, would fain flap her down the cliffs, and hold up her child in deliverance before the eye of the all-seeing God?

"No stop—no stay—she knew not that she drew her breath. Beneath her feet Providence fastened every loose stone, and to her hands strengthened every root. How

was she ever to descend? That fear, then, but once crossed her heart, as up—up—up to the little image made of her own flesh and blood. 'The God who holds me now from perishing—will not the same God save me when my child is on my bosom?' Down came the fierce rushing of the Eagles' wings—each savage bird dashing close to her head, so that she saw the yellow of their wrathful eyes. All at once they quailed, and were cowed. Yelling, they flew off to the stump of an ash jutting out of a cliff, a thousand feet above the cataract, and the Christian mother falling across the eyrie, in the midst of bones and blood, clasped her child—dead—dead—dead, no doubt,—but unmangled and untorn, and swaddled up just as it was when she laid it down asleep among the fresh hay, in a nook of the harvest field. Oh! what pang of perfect blessedness transfixed her heart from that faint feeble cry—'It lives—it lives—it lives!' and baring her bosom, with loud laughter and eyes dry as stones, she felt the lips of the unconscious innocent once more murmuring at the fount of life and love!

"Where, all this while, was Mark Steuart, the sailor? Half way up the cliffs. But his eye had got dim, and his head dizzy, and his heart sick; and he who had so often reefed the top-gallant-sail, when at midnight the coming of the gale was heard afar, covered his face with his hands, and dared look no longer on the swimming heights. 'And who will take care of my poor bed-ridden mother,' thought Hannah, whose soul, through the exhaustion of so many passions, could no more retain in its grasp that hope which it had clutched in despair. A voice whispered 'God.' She looked round expecting to see an angel, but nothing moved except a rotten branch, that under its own weight, broke off from the crumbling rock. Her eye, by some secret sympathy of her soul with the inanimate object, watched its fall; and it seemed to stop, not far off on a small platform. Her child was bound within her bosom—she remembered not how or when—but it was safe—and scarcely daring to open her eyes, she slid down the shelving rocks, and found herself on a small piece of firm root-bound soil, with the tops of bushes appearing below. With fingers suddenly strengthened into the power of iron, she swung herself down by briar and broom, and heather, and dwarf birch. There a loosened stone lept over a ledge, and no sound was heard, so profound was its fall. There, the shingle rattled down the screes, and she hesitated not to follow. Her feet bounded against the huge stone that stopped them, but she felt no pain. Her body was callous as the cliff. Steep as the wall of a house was now the side of the precipice. But it was matted with ivy, centuries old—long ago dead, and without a single green leaf—but with thousands of arm-thick stems petrified into the rock, and covering it as with a trellice. She bound her baby to her neck, and with hands and feet clung to that fearful ladder. Turning round her head, and looking down, lo! the whole population of the parish, so great was the multitude, on their knees! and hush, the voice of psalms—a hymn, breathing the spirit of one united prayer! Sad and solemn was the strain—but nothing dirge-like—breathing not of death, but deliverance. Often had she sung that tune, perhaps the very words, but them she heard not, in her own hut—she and her mother—or in the kirk, along with all the congregation. An unseen hand seemed fastening her fingers to the ribs of ivy, and in sudden inspiration, believing that her life was to be saved, she became almost as fearless as if she had been changed into a winged creature. Again her feet touched stones and earth—the psalm was hushed—but a tremulous sobbing voice was close beside her, and lo! a she goat, with two little kids at her feet!' 'Wild heights,' thought she, 'do these creatures climb, but the dam will lead down her kid by the easiest paths; for O, even in the brute creatures, what is the holy power of a mother's love!' and turning round her head, she kissed her sleeping baby, and for the first time she wept.

"Overhead frowned the front of the precipice, never touched before by human hand or foot. No one had ever dreamt of scaling it; and the Golden Eagles knew that well in their instinct, as, before they built their eyrie, they had brushed it with their wings. But all the rest of this part of the mountain side, though scarred, and seamed, and chasmed, was yet accessible—and more than one person in the parish had reached the bottom of the Glead's Cliff. Many were now attempting it, and ere the cautious mother had followed her dumb guides a hundred yards through, among dangers that, although enough to terrify the stoutest heart, were traversed by her without a shudder, the head of one man appeared, and then the head of another, and she knew that God had delivered her and her child in safety, into the care of their fellow-creatures. Not a word was spoken—eyes said enough—she hushed her friends with her hands, and with uplifted eyes pointed to the guides sent to her by heaven. Small green plats, where those creatures nibble the wild flowers, became now more frequent trodden lines, almost as easy as sheep-paths, showed that the dam had not led her young into danger; and now the brushwood dwindled away into straggling shrubs, and the party stood on a little eminence above the stream, and forming part of the strath. There had been trouble and agitation, much sobbing and many tears among the multitude, while the mother was scaling the cliffs,—sublime was the shout that echoed afar the moment she reached the eyrie,—and now that her salvation was sure, the great crowd rustled like a wind-swept wood.

"And for whose sake was all this alternation of agony?

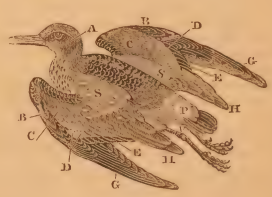
A poor humble creature, unknown to many even by name —one who had had but few friends, nor wished for more— contented to work all day, here—there—anywhere—that she might be able to support her aged mother and her little child—and who on sabbath took her seat in an obscure pew, set apart for paupers in the kirk!

"'Fall back, and give her fresh air, said the old minister of the parish; and the circle of close faces widened round her, lying as in death. 'Gie me the bonny bit bairn into my arms,' cried first one mother, and then another, and it was tenderly handed round the circle of kisses, many of the snooded maidens bathing its face in tears. 'There's no a single scratch about the puir innocent, for the Eagle, you see, maun, hae stuck its talons into the long claes and the shawl. Blin! blin! maun they be who see not the finger o' God in this thing!'

"Hannah started up from her swoon, looking wildly round, and cried, 'O! the bird, the bird!—the Eagle, the Eagle! The Eagle has carried off my bonny wee Walter—is there nane to pursue?' A neighbour put her baby into her breast,—and shutting her eyes, and smiting her forehead, the sorely bewildered creature said in a low voice, 'Am I wauken—O tell me if I'm wauken, or if a' this be the wark o' a fever, and the delirium o' a dream?'"

The strength of wing and muscular vigour of the Eagle are truly astonishing. The flesh has not, as some have alleged, any offensive smell or taste, but it resembles a bundle of cords, and cannot be eaten. Some notion of its power may be formed from the statement of Ramond, when he had ascended Mont Perdu, the loftiest of the Pyrenees, and nearly three miles above the level of the sea. He had for a considerable distance bid adieu to every living thing, animal or vegetable; but right over the summit there was a Golden Eagle far above him, dashing rapidly to windward against a strong gale, and apparently in her element and at her ease.

In the regions which she inhabits, the Golden Eagle, like the lion, owns no superior but man, and she owns him as such only on account of his intellectual resources. When taken ever so young, there is no very well authenticated account of the taming of an Eagle. The wandering hordes to the eastward of the Caspian sea, do, indeed, train Eagles to hunt both game and wild beasts; and Marco Polo, the father of modern travellers, who, in the early part of the thirteenth century, spent six and twenty years in a pilgrimage over the east, and revealed the wonders of the whole, as far as Cathay or China itself, records the Eagle hunts at the court of the great Khan of Tartary, as among the greatest marvels with which he met. It is probable that the Eagle thus trained to falconry, may have been the *imperial* Eagle, which is much more common in the south and east, and which, though a powerful bird, is not quite so savage as the Golden Eagle. That the Eagle was never used in European falconry, is certain. It is invariably classed with the "ignoble falcons," or those that keep as well as kill their prey. One bird is said to give the Eagle more trouble than any other, and that is the heron, rather a light and feeble bird. The heron gets under the shelter of a stone, or the stump of a tree, where neither the wing nor the talons of the Eagle can be effective; and from that position it twists round its long neck, and bites and gnaws the leg of its enemy. Several years ago, a heron was put into the cage of a powerful Eagle, at the Duke of Athol's, at Blair. It immediately betook itself to the shelter of a block of wood, which the Eagle had for a perch, and began to nibble and bite; nor did the Eagle vanquish it till after a contest of twenty-four hours. It is not very often, however, that the Golden Eagle frequents the haunts of the heron; her favourite ranges are the open moors and uplands, where the prey can be seen from a great distance, and there is little cover to shelter it. In England they do not often come to the woods, though they do so in the mountainous parts of France, where the winter is proportionally more severe, and the animals, upon which they prey at other times, are passing the cold season dormant in their holes.



AN EXPLANATION

Of the Technical Terms used by Ornithologists, descriptive of particular parts.

A—Auriculars,—feathers which cover the ears.

BB—The bastard wing, [*alulia spuria*, Lin.] three or five quill-like feathers, placed at a small joint rising at the middle part of the wing.

CC—The LESSER COVERTS of the WINGS, [*tectrices primæ*, Lin.] small feathers that lie in several rows on the bones of the wings. The UNDER COVERTS are those that line the inside of the wings.

DD—The GREATER COVERTS, [*tectrices secundæ*, Lin.] the feathers that lie immediately over the quill feathers and the secondaries.

GG—The PRIMARIES, or PRIMARY QUILLS, [*primores*, Lin.] the largest feathers of the wings: they rise from the first bone.

EE—The SECONDARIES, or SECONDARY QUILLS, [*secundariæ*, Lin.] those that rise from the second bone.

HH—The TERTIALS. These also take their rise from the second bone, at the *elbow joint*, forming a continuation of the secondaries, and seem to do the same with the scapulars, which lie over them. These feathers are so long in some of the *Scolopax* and *Tringa* genera, that when the bird is flying, they give it the appearance of having four wings.

SS—The SCAPULARS, or SCAPULAR FEATHERS, take their rise from the shoulders, and cover the sides of the back.

P—COVERTS of the TAIL. [*uropygium*, Lin.] These feathers cover it on the upper side, at the base.

V—The VENT FEATHERS, [*crissum*, Lin.] those that lie from the vent, or *anus*, to the tail underneath.

IRIS, (plural IRIDES) the part which surrounds the pupil of the eye.

MANDIBLES,—the upper and under parts of the bill.

COMPRESSED,—flatted at the sides vertically.

DEPRESSED,—flatted horizontally.

CUNEATED,—wedge-shaped.

The CERE, [*cera*, Lin.] the naked skin which covers the base of the bill, as in the Hawk kind.

THE ORBITS, [*orbita*, Lin.] the skin which surrounds the eye. It is generally bare, but particularly in the Parrot and the Heron.

When the bill is notched near the tip, as in Shrikes, Thrushes, &c. it is called by Linnæus *rostrum emarginatum*.

Vibrissæ, (Lin.) are hairs that stand forward like feelers: in some birds they are slender, as in Flycatchers, &c. and point both upwards and downwards, from both the upper and under sides of the mouth.

Capistrum,—a word used by Linnæus to express the short feathers on the forehead, just above the bill. In some birds these feathers fall forward over the nostrils: they quite cover those of the Crow.

Rostrum cultratum, (Lin.) when the edges of the bill are very sharp, as in that of the Crow.

Vibrissæ pectinatæ, (Lin.) as in the Whip-poor-will. These hairs in this bird are very stiff, and spread out on each side like a comb from the upper sides of the mouth only.

SERRATED like a saw. PECTINATED signifies toothed like a comb.

The LORE, [*lorum*, Lin.] as in the Grebe, the space between the bill and the eye, which in this genus is bare, but in other birds is generally covered with feathers.

FIN-FOOTED and SCALLOPED, [*pinnatus*, Lin.] as in the feet of Coots.

Pes lobatus, (Lin.) Toes furnished on the sides with broad plain membranes, as in the feet of the Grebe.

WEB-FOOTED,—where the toes are connected by webs, as in Ducks.

SEMI-PALMATED, [*semi-palmatus*, Linnæus,] when the middle of the webs reach only about half the length of the toes.

CILIATED, [*linguia siliata*, Lin.] when the tongue is edged with fine bristles, as in Ducks.

NOSTRILS LINEAR,—when they are extended lengthwise in a line with the bill, as in Divers, &c.

NOSTRILS PERVIOUS,—when they are open, and may be seen through from side to side, as in Gulls, &c.

Bewick.

WHIRLWINDS AND WATERSPOUTS.

THE following table shows the velocities of the different winds, from one mile in an hour, when the motion is scarcely perceptible, to one hundred miles, which is the speed of the destructive hurricane.

Miles per hour.	Feet per second.	
1	1.47	
2	2.93	Light airs.
3	4.40	
4	5.87	Breeze.
5	7.33	
10	14.67	Brisk gale.
15	22.00	
20	29.34	Fresh gale.
25	36.67	
30	44.01	Strong gale.
35	51.34	
40	58.88	Hard gale.
45	66.01	
50	73.35	Storm.
60	88.02	
80	117.36	Hurricanes tearing up trees, overturning buildings, and almost every other obstacle.
100	146.70	

When, from a sudden rarefaction, or any other cause, contrary currents of air meet in the same spot, a WHIRLWIND is produced. Dr. Franklin gives an account of the formation and progress of one of these meteors, which he witnessed in Maryland, while travelling with his son. "In a valley below us," says he, "we saw a small whirlwind, which began in the road, and which drew attention by the dust that it raised and contained. It appeared like a sugar-loaf, lengthened at the point, which ascended to us along the hill, increasing in size as it advanced. When it passed near us, its smaller end, which was next the ground, did not appear bigger than a common barrel, but it grew so large towards the summit, that at the height of forty or fifty feet it seemed to be twenty or thirty feet in diameter. The rest of the company stopped to look at it; but, as my curiosity was stronger than theirs, I followed it closely, and observed that, on its passage, it licked up, if I may use the expression, all the dust which was beneath its lower end. As it is a popular opinion that a shot fired at a water-spout will make it burst, I endeavoured to break this small whirlwind, by striking it repeated blows with my whip, but to no purpose. In a short time it quitted the road, and entered the wood, where it every moment became larger and stronger, carrying away, instead of dust, the dry leaves with which the ground was thickly strewed, and making a great noise between those leaves and the branches of trees, bending and turning large trees circularly with astonishing force. Though the progressive motion of the whirlwind was not so fast but that a man on foot might easily keep up with it, yet its circular motion was astonishingly rapid. The leaves with which it was then filled enabled me to perceive distinctly that the current of air that drove them ascended from below to above in a spiral line, and when I looked at the trunks and bodies of great trees which the whirlwind had enveloped as it passed on, and which had left it entire, I was no longer astonished that my whip could produce no effect on it. I followed it nearly three quarters of a mile, till some dead branches of trees, broken by the whirlwind, flying in the air, and falling around me, made me apprehensive of danger. I therefore stopped, and contented myself with watching the head of it during its progress, the leaves which it bore with it rendering it visible at a great height above the trees. The major part of these leaves, escaping freely from the upper and widest part of the whirlwind, were dispersed by the wind; but they were at such an elevation in the air that they did not seem larger than flies. My son followed the whirlwind through the wood, on quitting which it crossed an old tobacco plantation, where, finding neither leaves nor dust to carry away, the lower part of it became nearly invisible, and at length it entirely disappeared above this field." This meteor moved in a direction almost opposite to the prevailing wind, and not in a straight line; and its velocity was not uniform, as it seemed occasionally to be stationary for a few seconds, and then to rush forward with increased speed.

It is not always, however, that whirlwinds are thus harmless. They are often combined with electrical phenomena, in which case they scatter destruction over a considerable extent of country. France, particularly in the south, has often suffered from their violence. In August 1823, one of them, of great magnitude, ravaged the neighbourhood of Anet, in the department of the Eure and Loire. It extended from the clouds to the ground, and was formed of a thick and blackish vapour, in the midst of which flames frequently appeared in various directions. Rushing furiously forward, it rooted up and broke seven or eight hundred trees within the space of a league, and then fell impetuously on the village of Marchefroy. Half the houses of the village were destroyed in an instant; the walls were prostrated on all sides, and the roofs were torn off, and carried to the distance of half a league, by the irresistible impulse of the aerial torrent. At the same time the meteor discharged a shower of hailstones, several inches in diameter, which broke to pieces heavily laden wagons, and destroyed every vestige of the harvest. A still more terrific visitation of this kind was experienced in August, 1826, in the department of the Aude. About noon, the clouds began to gather in the west, a violent wind arose, and a black and thick cloud appeared suspended over a spot called the Red Field. On the side of Fombraise, the clouds were seen to rush against each other, and to descend very low, as if they were attracted by the earth. The thunder echoed from all parts; a dead rolling sound was heard; and all the domestic animals fled to shelter. All at once a frightful cracking was heard in the west; the air, violently agitated, was drawn with extreme rapidity towards the opake cloud which covered the Red Field. The moment of their junction was marked by a loud explosion, and the appearance of a column of fire, which, sweeping along the field, rooted up every thing in its course. A young man, who was unfortunate enough to be in the path of the meteor, was whirled into the air, and fractured his skull by falling on a rock. Fourteen sheep were also snatched up, and fell suffocated. The column of air and fire then proceeded to the castle of Laconette, threw down the west wall of the park, made two excavations, removed enormous rocks, rooted up the largest trees, and penetrated into the castle in two places, where it committed the most terrible devastation. After having thus ravaged a con-

siderable extent of country, it finally disappeared, leaving the ground deeply furrowed, and the air strongly impregnated with a sulphureous odour.

The same effect that is produced by two contending currents of air takes place in another element, and gulfs or whirlpools are no other than the eddies of the water formed by the action of two or more opposite currents. The greatest known gulf is that of the Norway sea, called Maalstroem, or Moskostroem, which is affirmed to be upwards of twenty leagues in circuit. It absorbs for six hours all that is near it, water, ships, &c. and afterwards returns them in the same space of time as it drew them in.

A Waterspout is no other than a whirlwind at sea. The vacuum which is caused by the meeting currents causes the water to rise up in the form of a cylinder, or rather of an inverted cone. In the travels of M. Thevenot there is a very minute and circumstantial account of the formation of a waterspout.

"The first," says this celebrated voyager, "which appeared to me was on the northern coast, between us and the island Quesomo, at a gun shot from the ship; the head of the ship was then to the northeast: we directly perceived water which boiled on the surface of the sea about a foot high; it was whitish, and appeared above that height like a thick smoke, so that it properly resembled some burning straw, which only smoked; it made a noise like that of a torrent which runs with much rapidity in a deep valley: but this noise was mixed with a clearer, similar to the strong hissing of serpents or vipers; a little while afterwards we perceived something like a dark canal, which bore a strong resemblance to a smoke which ascends towards the clouds, turning round with great velocity: this appeared about the thickness of my finger, and the same noise still continued; the duration of this spout was no longer than about half a quarter of an hour: this over, we perceived another one the south side of us, which began in the same manner as the preceding: and almost as soon, a similar one made its appearance on the west side; and directly after a third by the side of the second; the farthest of the three might be about a musket shot distance from us: they all three appeared like burning heaps of straw, a foot and a half or two feet high. We afterwards saw as many canals, which descended from the clouds on those places where the water was raised up, and each of them was as broad at the end fastened to the cloud, as the broad end of a trumpet, and resembled the human breast or that of an animal, drawn perpendicularly down by a heavy weight; these canals appeared of a darkish white, and were not straight, but crooked in some places; they even were not perpendicular; but on the contrary, from the clouds where they were joined to the parts which drew in the water, they were very much bent; and what is more particular is, that having been driven by the wind, this canal followed it without breaking or quitting the place where it drew in the water, and passing behind the first canal, they were sometimes crossed like a St. Andrew's Cross. At the beginning they were all three about the thickness of my finger, but afterwards the first of the three increased considerably: but the last which was formed scarcely remained longer than that which we saw on the north side. The second on the south side remained about a quarter of an hour, but the first on that side remained a little longer, and this it was which terrified us the most. At first its canal was as thick as my finger, afterwards as thick as my arm, then as my leg, and at last as the trunk of a large tree, which a man might compass with his arms. We distinctly perceived water through this transparent body, which ascended in a serpentine manner. Sometimes it diminished a little in size, sometimes at top and sometimes at bottom; and then it resembled exactly a soft tube, with some fluid matter pressed with the fingers, either upwards to make this liquor descend, or at bottom, to cause it to ascend. After this it diminished so much that it was thinner than my arm; afterwards it returned as thick as my thigh, and then again became very thin; at last, I saw that the water elevated on the surface of the sea began to lower, and the end of the canal which touched it divided and grew narrower, when a variation of the light removed it from our view."

Wright's Buffon.

RAIL.

RALLUS CAROLINUS.

[Plate XVIII.]

Soree, Catesb. i. 70.—*Arct. Zool. p.* 491, *No.* 409.—*Little American Water Hen*, Edw. 144.—*Le Râl de Virginie*, Buff. viii. 165.—*Rallus Carolinus*, Lin. *Syst. p.* 153, *No.* 5, ed. 10.—*Gallinula Carolina*, Lath. *Ind. Orn. p.* 771, *No.* 17.—J. Doughty's Collection.

Of all our land or water fowl, perhaps none afford the sportsman more agreeable amusement, or a more delicious repast, than the little bird now before us. This amusement is indeed temporary, lasting only two or three hours in the day, for four or five weeks in each year; but as it occurs in the most agreeable and temperate of our seasons, is attended with little or no fatigue to the gunner, and is frequently successful, it attracts numerous followers, and is pursued, in

RAIL

such places as the birds frequent, with great eagerness and enthusiasm.

The natural history of the *Rail*, or as it is called in Virginia, the *Sora*, and in South Carolina the *Coot*, is, to the most of our sportsmen, involved in profound and inexplicable mystery. It comes, they know not whence; and goes, they know not whither. No one can detect their first moment of arrival; yet all at once the reedy shores, and grassy marshes, of our large rivers swarm with them, thousands being sometimes found within the space of a few acres. These, when they do venture on wing, seem to fly so feebly, and in such short fluttering flights among the reeds, as to render it highly improbable, to most people, that they could possibly make their way over an extensive tract of country. Yet, on the first smart frost that occurs, the whole suddenly disappear, as if they had never been.

To account for these extraordinary phenomena, it has been supposed, by some, that they bury themselves in the mud; but as this is every year dug into by ditchers and people employed in repairing the banks, without any of those sleepers being found, where but a few weeks before these birds were innumerable, this theory has been generally abandoned. And here their researches into this mysterious matter generally end in the common exclamation of "What can become of them!" Some profound inquirers, however, not discouraged with these difficulties, have prosecuted their researches with more success; and one of those, living a few years ago near the mouth of James river, in Virginia, where the Rail or Sora are extremely numerous, has (as I was informed on the spot) lately discovered, that they change into *frogs!* having himself found in his meadows an animal of an extraordinary kind, that appeared to be neither a Sora nor a frog; but, as he expressed it, "something between the two." He carried it to his negroes, and afterwards took it home, where it lived three days, and in his own, and his negroes' opinion, it looked like nothing in this world but a real Sora, changing into a frog! What farther confirms this grand discovery, is the well known circumstance of the frogs ceasing to hollow as soon as the Sora comes in the Fall.

This sagacious discoverer, however, like many others renowned in history, has found but a few supporters; and, except his own negroes, has not, as far as I can learn, made a single convert to his opinion. Matters being so circumstanced, and some explanation necessary, I shall endeavour to throw a little more light on the subject, by a simple detail of facts, leaving the reader to form his own theory as he pleases.

The Rail or Sora belongs to a genus of birds of which about thirty different species are enumerated by naturalists; and these are distributed over almost every region of the habitable parts of the earth. The general character of these is every where the same. They run swiftly, fly slowly, and usually with the legs hanging down; become extremely fat; are fond of concealment, and, wherever it is practicable, prefer running to flying. Most of them are migratory, and abound during the summer in certain countries, the inhabitants of which have very rarely an opportunity of seeing them. Of this last the Land Rail of Britain is a striking example. This bird, which, during the summer months, may be heard in almost every grass and clover field in the kingdom, uttering its common note, *crek, crek*, from sunset to a late hour in the night, is yet unknown, by sight, to more than nine-tenths of the inhabitants. "Its well known cry," says Bewick, "is first heard as soon as the grass becomes long enough to shelter it, and continues till the grass is cut; but the bird is seldom seen, for it constantly skulks among the thickest part of the herbage, and runs so nimbly through it, winding and doubling in every direction, that it is difficult to come near it; when hard pushed by the dog, it sometimes stops short, and squats down, by which means its too eager pursuer overshoots the spot, and loses the trace. It seldom springs but when driven to extremity, and generally flies with its legs hanging down, but never to a great distance; as soon as it alights it runs off, and before the fowler has reached the spot, the bird is at a considerable distance." The *Water Crake*, or Spotted Rail of the same country, which in its plumage approaches nearer to our Rail, is another notable example of the same general habit of the genus. "Its common abode," says the same writer, "is in low swampy grounds, in which are pools or streamlets overgrown with willows, reeds and rushes, where it lurks and hides itself with great circumspection; it is wild, solitary, and shy, and will swim, dive or skulk under any cover, and sometimes suffer itself to be knocked on the head, rather than rise before the sportsman and his dog." The Water Rail of the same country is equally noted for the like habits. In short, the whole genus possess this strong family character in a very remarkable degree.

These three species are well known to migrate into Britain early in spring, and to leave it for the more southern parts of Europe in autumn. Yet they are rarely or never seen in their passage to or from the countries where they are regularly found at different seasons of the year; and this for the very same reasons, that they are so rarely seen even in the places where they inhabit.

It is not, therefore, at all surprising, that the regular migrations of the American Rail or Sora should, in like manner, have escaped notice in a country like this, whose population bears so small a proportion to its extent; and where the study of natural history is so little attended to. But

that these migrations do actually take place, from north to south, and *vice versa*, may be fairly inferred from the common practice of thousands of other species of birds less solicitous of concealment, and also from the following facts:

On the twenty-second day of February, I killed two of these birds in the neighbourhood of Savannah, in Georgia, where they have never been observed during the summer. On the second of the May following, I shot another in a watery thicket below Philadelphia, between the rivers Schuylkill and Delaware, in what is usually called the *Neck*. This last was a male, in full plumage. We are also informed, that they arrive at Hudson's Bay early in June, and again leave that settlement for the south early in autumn. That many of them also remain here to breed is proved by the testimony of persons of credit and intelligence with whom I have conversed, both here and on James river in Virginia, who have seen their nests, eggs and young. In the extensive meadows that border the Schuylkill and Delaware, it was formerly common, before the country was so thickly settled there, to find young Rail in the first mowing time, among the grass. Mr. James Bartram, brother to the botanist, a venerable and active man of eighty-three, and well acquainted with this bird, says, that he has often seen and caught young Rail in his own meadows in the month of June; he has also seen their nest, which he says is usually in a tussock of grass, is formed of a little dry grass, and has four or five eggs of a dirty whitish colour, with brown or blackish spots; the young run off as soon as they break the shell, are then quite black, and run about among the grass like mice. The old ones he has very rarely observed at that time, but the young often. Almost every old settler along these meadows, with whom I have conversed, has occasionally seen young Rail in mowing time; and all agree in describing them as covered with blackish down. There can, therefore, be no reasonable doubt as to the residence of many of these birds both here and to the northward during the summer. That there can be as little doubt relative to their winter retreat, will appear more particularly towards the sequel of the present account. During their residence here, in summer, their manners exactly correspond with those of the Water Crake of Britain already quoted; so that, though actually a different species, their particular habits, common places of resort, and eagerness for concealment, are as nearly the same as the nature of the climates will admit.

Early in August, when the reeds along the shores of the Delaware have attained their full growth, the Rail resort to them in great numbers, to feed on the seeds of this plant, of which they, as well as the Rice-birds, and several others, are immoderately fond. These reeds, which appear to be the *Zizania panicula effusa* of Linnæus, and the *Zizania clavulosa* of Wildenow, grow up from the soft muddy shores of the tide water, which are alternately dry, and covered with four or five feet of water. They rise with an erect, tapering stem, to the height of eight or ten feet, being nearly as thick below as a man's wrist, and cover tracts along the river, of many acres. The cattle feed on their long green leaves with avidity, and wade in after them, as far as they dare safely venture. They grow up so close together that, except at or near high water, a boat can with difficulty make its way through among them. The seeds are produced at the top of the plant, the blossoms or male parts occupying the lower branches of the pannicle, and the seeds the higher. These seeds are nearly as long as a common sized pin, somewhat more slender, white, sweet to the taste, and very nutritive, as appears by their effects on the various birds that, at this season, feed on them.

When the reeds are in this state, and even while in blossom, the Rail are found to have taken possession of them in great numbers. These are generally numerous in proportion to the full and promising crop of the former. As you walk along the embankment of the river, at this season, you hear them squeaking in every direction, like young puppies; if a stone be thrown among the reeds, there is a general outery, and a reiterated *kuk kuk kuk*, something like that of a guinea-fowl. Any sudden noise, or the discharge of a gun, produces the same effect. In the meantime, none are to be seen, unless it be at or near high-water; for when the tide is low, they universally secrete themselves among the interstices of the reeds, and you may walk past, and even over them, where there are hundreds, without seeing a single individual. On their first arrival they are generally lean, and unfit for the table; but as the reeds ripen, they rapidly fatten, and from the twentieth of September to the middle of October, are excellent, and eagerly sought after. The usual method of shooting them, in this quarter of the country, is as follows: The sportsman furnishes himself with a light batteau, and a stout experienced boatman, with a pole twelve or fifteen feet long, thickened at the lower end, to prevent it from sinking too deep into the mud. About two hours or so before high-water, they enter the reeds, and each takes his post, the sportsman standing in the bow ready for action, the boatman on the stern seat, pushing her steadily through the reeds. The Rail generally spring singly, as the boat advances, and at a short distance a-head, are instantly shot down, while the boatman, keeping his eye on the spot where the bird fell, directs the boat forward, and picks it up as the gunner is loading. It is also the boatman's business to keep a sharp look-out, and give the word *mark*, when a Rail springs on either side, without being observed

by the sportsman, and to note the exact spot where it falls, until he has picked it up; for this once lost sight of, owing to the sameness in the appearance of the reeds, is seldom found again. In this manner the boat moves steadily through, and over the reeds, the birds flushing and falling, the gunner loading and firing, while the boatman is pushing and picking up. The sport continues till an hour or two after high-water, when the shallowness of the water, and the strength and weight of the floating reeds, as also the backwardness of the game to spring as the tide decreases, obliges them to return. Several boats are sometimes within a short distance of each other, and a perpetual cracking of musquetry prevails along the whole reedy shores of the river. In these excursions it is not uncommon for an active and expert marksman to kill ten or twelve dozens in a tide. They are usually shot singly, though I have known five killed at one discharge of a double-barrelled piece. These instances, however, are rare.

The flight of these birds among the reeds is usually low; and, shelter being abundant, is rarely extended to more than fifty or one hundred yards. When winged, and uninjured in their legs, they swim and dive with great rapidity, and are seldom seen to rise again. I have several times, on such occasions, discovered them clinging with their feet to the reeds under the water, and at other times skulking under the floating reeds, with their bill just above the surface. Sometimes, when wounded, they dive, and rising under the gunwale of the boat, secrete themselves there, moving round as the boat moves, until they have an opportunity of escaping unnoticed. They are feeble and delicate in every thing but the legs, which seem to possess great vigour and energy; and their bodies being so remarkably thin, or compressed, as to be less than an inch and a quarter through transversely, they are enabled to pass between the reeds like rats. When seen, they are almost constantly jetting up the tail. Yet, though their flight among the reeds seems feeble and fluttering, every sportsman, who is acquainted with them here, must have seen them occasionally rising to a considerable height, stretching out their legs behind them, and flying rapidly across the river, where it is more than a mile in width.

Such is the mode of Rail-shooting in the neighbourhood of Philadelphia. In Virginia, particularly along the shores of James river, within the tide water, where the Rail, or Sora, are in prodigious numbers, they are also shot on the wing, but more usually taken at night in the following manner:—A kind of iron grate is fixed on the top of a stout pole, which is placed like a mast, in a light canoe, and filled with fire. The darker the night, the more successful is the sport. The person who manages the canoe is provided with a light paddle, ten or twelve feet in length; and about an hour before high-water proceeds through among the reeds, which lie broken and floating on the surface. The whole space, for a considerable way round the canoe, is completely enlightened; the birds stare with astonishment, and as they appear, are knocked on the head with the paddle, and thrown into the canoe. In this manner from twenty to eighty dozens have been killed by three negroes, in the short space of three hours.

At the same season, or a little earlier, they are very numerous in the lagoons near Detroit, on our northern frontiers, where another species of reeds (of which they are equally fond) grows in shallows, in great abundance. Gentlemen who have shot them there, and on whose judgment I can rely, assure me, that they differ in nothing from those they have usually killed on the shores of the Delaware and Schuylkill; they are equally fat, and exquisite eating. On the sea coast of New Jersey, where these reeds are not to be found, this bird is altogether unknown; though along the marshes of Maurice river, and other tributary streams of the Delaware, and wherever the reeds abound, the Rail are sure to be found also. Most of them leave Pennsylvania before the end of October, and the southern States early in November; though numbers linger in the warm southern marshes the whole winter. A very worthy gentleman, Mr. Harrison, who lives in Kittiwan, near a creek of that name, on the borders of James river, informed me, that in burning his meadows early in March, they generally raise and destroy several of these birds. That the great body of these Rail winter in countries beyond the United States, is rendered highly probable from their being so frequently met with at sea, between our shores and the West India islands. A captain Douglass informed me, that on his voyage from St. Domingo to Philadelphia, and more than a hundred miles from the capes of the Delaware, one night the man at the helm was alarmed by a sudden crash on deck, that broke the glass in the binnacle, and put out the light. On examining into the cause, three Rail were found on deck, two of which were killed on the spot, and the other died soon after. The late bishop Madison, president of William and Mary college, Virginia, assured me, that a Mr. Skipwith, for some time our consul in Europe, in his return to the United States, when upwards of three hundred miles from the capes of the Chesapeake, several Rail or Soras, I think five or six, came on board, and were caught by the people. Mr. Skipwith being well acquainted with the bird, assured him that they were the very same with those usually killed on James river. I have received like assurances from several other gentlemen, and captains of vessels, who have met with these birds between the main land and the islands, so as to leave no doubt on my mind of the fact. For, why should it be considered incredible that

a bird which can both swim and dive well, and at pleasure fly with great rapidity, as I have myself frequently witnessed, should be incapable of migrating, like so many others, over extensive tracts of land or sea? Inhabiting, as they do, the remote regions of Hudson's Bay, where it is impossible they could subsist during the rigors of their winter, they must either emigrate thence or perish; and as the same places in Pennsylvania, which abound with them in October, are often laid under ice and snow during the winter, it is as impossible that they could exist here in that inclement season; Heaven has therefore given them, in common with many others, certain prescience of these circumstances; and judgment, as well as strength of flight, sufficient to seek more genial climates, abounding with their suitable food.

The Rail is nine inches long, and fourteen inches in extent; bill yellow, blackish towards the point; lores, front, crown, chin, and stripe down the throat, black; line over the eye, cheeks and breast, fine light ash; sides of the crown, neck, and upper parts generally, olive brown, streaked with black, and also with long lines of pure white, the feathers being centred with black, on a brown olive ground, and edged with white; these touches of white are shorter near the shoulder of the wing, lengthening as they descend; wing plain olive brown; tertials streaked with black and long lines of white; tail pointed, dusky olive brown, centered with black, the four middle feathers bordered for half their length with lines of white; lower part of the breast marked with semicircular lines of white, on a light ash ground; belly white; sides under the wings deep olive, barred with black, white and reddish buff; vent brownish buff; legs, feet and naked part of the thighs, yellowish green; exterior edge of the wing white; eyes reddish hazel.

The females and young of the first season, have the throat white, the breast pale brown, and little or no black on the head. The males may always be distinguished by their ashy blue breasts, and black throats.

During the greater part of the months of September and October, the market of Philadelphia is abundantly supplied with Rail, which are sold from half a dollar to a dollar a dozen. Soon after the twentieth of October, at which time our first smart frosts generally take place, these birds move off to the south. In Virginia they usually remain until the first week in November.

Since the above was written, I have received from Mr. George Ord, of Philadelphia, some curious particulars relative to this bird, which, as they are new, and come from a gentleman of respectability, are worthy of being recorded, and merit further investigation.

"My personal experience," says Mr. Ord, "has made me acquainted with a fact in the history of the Rail, which perhaps is not generally known; and I shall, as briefly as possible, communicate it to you. Some time in the autumn of the year 1809, as I was walking in a yard, after a severe shower of rain, I perceived the feet of a bird projecting from a spout. I pulled it out, and discovered it to be a Rail, very vigorous, and in perfect health. The bird was placed in a small room, on a gin-case; and I was amusing myself with it, when, in the act of pointing my finger at it, it suddenly sprang forward, apparently much irritated, fell to the floor, and stretching out its feet, and bending its neck, until the head nearly touched the back, became to all appearance lifeless. Thinking the fall had killed the bird, I took it up, and began to lament my rashness in provoking it. In a few minutes it again breathed; and it was some time before it perfectly recovered from the fit, into which, it now appeared evident, it had fallen. I placed the Rail in a room, wherein Canary birds were confined; and resolved that, on the succeeding day, I would endeavour to discover whether or not the passion of anger had produced the fit. I entered the room at the appointed time, and approached the bird, which had retired, on beholding me, in a sullen humour, to a corner. On pointing my finger at it, its feathers were immediately ruffled; and in an instant it sprang forward, as in the first instance, and fell into a similar fit. The following day the experiment was repeated, with the like effect. In the autumn of 1811, as I was shooting amongst the reeds, I perceived a Rail rise but a few feet before my batteau. The bird had risen about a yard when it became entangled in the tops of a small bunch of reeds, and immediately fell. Its feet and neck were extended, as in the instances above mentioned; and before it had time to recover, I killed it. Some few days afterwards, as a friend and I were shooting in the same place, he killed a Rail, and, as we approached the spot to pick it up, another was perceived, not a foot off, in a fit. I took up the bird, and placed it in the crown of my hat. In a few moments it revived, and was as vigorous as ever. These facts go to prove, that the Rail is subject to gusts of passion, which operate to so violent a degree as to produce a disease, similar in its effects so epilepsy. I leave the explication of the phenomenon to those pathologists who are competent and willing to investigate it. It may be worthy of remark, that the birds affected as described, were all females of the *Rallus Carolinus*, or Common Rail.

"The Rail, though generally reputed a simple bird, will sometimes manifest symptoms of considerable intelligence. To those acquainted with Rail shooting, it is hardly necessary to mention, that the tide, in its flux, is considered an almost indispensable auxiliary; for, when the water is off the marsh, the lubricity of the mud, the height and com-

pactness of the reed, and the swiftness of foot of the game, tend to weary the sportsman, and tend to frustrate his endeavours. Even should he succeed in a tolerable degree, the reward is not commensurate to the labour. I have entered the marsh in a batteau, at a common tide, and in a well known haunt have beheld but few birds. The next better tide, on resorting to the same spot, I have perceived abundance of game. The fact is, the Rail dive, and conceal themselves beneath the fallen reed, merely projecting their heads above the surface of the water for air, and remain in that situation until the sportsman has passed them; and it is well known, that it is a common practice with wounded Rail to dive to the bottom, and, holding upon some vegetable substance, support themselves in that situation until exhausted. During such times, the bird, in escaping from one enemy, has often to encounter another not less formidable. Eels and cat-fish swarm in every direction, prowling for prey; and it is ten to one if a wounded Rail escapes them. I myself have beheld a large eel make off with a bird that I had shot, before I had time to pick it up; and one of my boys, in bobbing for eels, caught one with a whole Rail in its belly.

"I have heard it observed, that on the increase of the moon, the Rail improves in fatness, and decreases in a considerable degree with that planet. Sometimes I have conceited that the remark was just. If it be a fact, I think it may be explained on the supposition, that the bird is enabled to feed at night, as well as by day, while it has the benefit of the moon, and with less interruption than at other periods."

UNITED BOWMEN OF PHILADELPHIA.

Long did he live the honour of the bow,
And his long life to that alone did owe.
Epitaph on the tomb of Sir William Wood.

Who has not heard of old Izaak Walton? far and near, to old and young his name is familiar; his admirable skill and instructions, so wittily told, in the quaint language of the times in which he wrote, are too deeply impressed on our youthful recollections ever to be effaced, while we have limb or muscle to follow the mazes of the brook, or, when they have fail'd, a tongue to tell of by gone pastimes. Roger Ascham is not, I am sorry to say, so well known;

his, like Izaak's to the angler, is the text book of the Archer, and not less worthy of our grateful recollection. To become a perfect Archer it is only necessary to read his Toxophilus, and practice carefully his precepts. In the course of that practice you will not fail to fall into some, if not all, of those faults so "wittilye" described by him, thus: "The discomodityes which ill custom hath grafted in Archers, some shooteth his head foreward, as though he would byte the marke; another stareth with his eyes, as though they should flye out; another winketh with one eye and looketh with the other; some maketh a face with wrythinge their mouth; another byteth his lips, another holdeth his neck awrye. In drawing, one will stand pointing his shafte at the mark a good while, and by and by he will give him a whippe, and away or a man witte: another draweth softly to the middle, and by and by it is gone, you cannot know howe: another draweth his shafte low at the breast, as though he would shoot at a roving mark, and by and by, he lifteth his arm to the height: one maketh a wrynchinge in his back, as though a man pinched him behind: another coureth down, and layeth out his rumpe, as though he would shoot at crowes; some draw too farre, some too shorte, some too quicklye, some too slowlye, some hold over longe, some let go over soone; and afterwards when the shafte is gone, men have many faultes, which evil custome has brought them to, and speciallye in cryinge after the shafte, and speakinge wordes scarce honest for such an honest pastime, and besydes those which must needes have theyr tongue thus walkinge, other men use other faultes. Some will give two or three strides forwarde, daunsinge and hoppinge after his shafte, as long as it flyeth as though he were a madde man, some which feare to be too far gone, run backward, as it were to pull his shafte backe, another forward when he feareth to be shorte heavinge after his armes, as though he woulde helpe his shafte to flye, another wrythes, or runneth asyde, to pull in his shafte straighte, one lifteth up his heele, and so holdeth his foote still as long as his shafte flyeth. And many other faultes there be, which now come not to my remembrance. Thus, as you have hearde, many Archers with marringe theyr face and countenance, with other parts of theyr bodye, as it were men that should daunce antiques, be farre from the comely part in shootynge, which he that woulde be excellent must looke for. Of these faultes, I have very manye myselfe, but I talke not of my shootynge. Now ymagen an Archer that is cleane without all these faultes, and I am sure every man would be delighted to see him shoote."

I have ran on with this quotation longer than was my intention, but it is too faithful a picture to be curtailed of any of its fair proportions. My object is to give you a sketch of the only association that we know of, on this side of the *big water*, for the practice of this ancient and honourable pastime; the wood craft of the merry Archers, celebrated alike, in the ballad and romance.

Our association was commenced in the fall of 1828, by a few gentlemen, whose sole knowledge was the recollection of the hoop bow, and shingle arrows of boyhood, and the clumsy feats of the half civilized Indians, who are occasionally seen shooting for pennies on the pavements of our cities, with miserable tools and worse skill. Our want of knowledge led us into many errors, and gave us much trouble; we blundered on taking hints from examinations of the different instruments of warfare contained in the cabinets of our museums, and from every source that could furnish information. Our first practice meeting was ludicrous; let me describe it, if I can. At the head of the file to which we were ranged, stood the long ⌘ with a bow about 18 inches long, from the N. W. coast of America, and a Canton arrow three feet two inches long, with a whistling head. Next to him, and scarcely reaching to his elbow, was the neat, small figure of our worthy friend, the artist, with a seven foot Malay bow, held in a horizontal position, simply because he could not hold it in any other, while he stood on the ground. Then came the ℨ with an arrow, long after known in the club as the *broom stick*, being made of a defunct brush handle, shaved down a little. My turn comes next, a real Sandwich Islander, the *crack* bow of the club at that time, which I managed most grotesquely, holding it at an angle of forty-five degrees to the horizon. The arrow was all the way from the Missouri, and now reposes ingloriously in the top of a button wood, where it went of its own accord; I give you my word that I aimed it at a pasteboard target, some sixty feet off, on the same level as ourselves. With such an equipment, and there is not much exaggeration in the description, it is very remarkable that we should have persevered, but the zeal of the members, finally conquered every difficulty. You must not suppose, for a moment, that we continued these puerile proceedings, any longer than we could help; at a very early period of the association, an order had been despatched to Mr. Thomas Waring, of London, the most celebrated modern *Bowyer*, for an equipment of the best quality, and full information on the subject, all of which was received in due time; and consisted of a lemon wood bow, and spare strings, a dozen arrows contained in a quiver, a belt, pouch, grease box, and tassel, a splendid pair of targets, and finally, Waring's "Treatise on Archery," accompanied by a *bill* as long as a woodcock's, of heavy charges, no inconsiderable item of which was Uncle Sam's thirty-three and a third per cent. duties. These articles were received on the 28th of March, 1829, from which time may be dated the

efficient existence of our club: and we have gone on regularly increasing in skill until the present time.

The United Bowmen, associated for the practice of Archery, was instituted on the 23d of September, 1828, and consists of members proper, honorary, and associate. The first are those who practice; the second those who reside at a distance, but take interest in the subject; and the last those who may have been members of the club; governed by a constitution, administered by a President, Secretary, and Treasurer. The initiation fee is five dollars, and a monthly contribution of fifty cents is required of each member, and defrays the expense of prizes, and the necessary fixtures. The organization of the Society is nearly similar to that of all others; it is not, therefore, proper to occupy your useful space with details that are not peculiarly applicable to our subject.

By the regulations, practice meetings are held weekly, at such time, place, and distance, as may be specified at the stated monthly meetings of the club.

The members serve in rotation as Captain of the Target at each meeting of practice; their duties are to decide on all hits, and to register the same, &c.; it is not necessary to give you a detail, for with all forethought, something would be left out, and for contingencies, there can be provision; let it suffice, that his authority is absolute; from his decision there is no appeal.

The targets consist of five concentric circles, the inner one eight inches in diameter, is gilded; the second eight inches larger in diameter, and painted red; the third increased eight inches, and painted white; the fourth increased eight inches, and painted black; and the fifth eight inches larger than the last, and painted light blue.

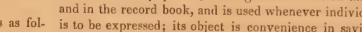
The value of the hits in the different colours is as follows: gold, nine; red, seven; white, five; black, three; and light blue, one.

On the second Wednesday of September of each year, two prizes are shot for; the first and most valuable is awarded to the Archer whose hits value highest, according to the foregoing arrangement; the secondary to him who places an arrow nearest to the centre, with this proviso, that he who gains the first, cannot take the second. The first, it is evident, will become the property of the best Archer of the day; the secondary may, of course, fall to the share of some lucky wight, whose arrow may be wafted out of its legitimate direction by some passing breeze, or, as has been the case, may have struck the limb of an apple tree, some fifteen feet out of the direction of the target, and be carried by the glance direct to the centre of the gold. As this prize cannot be taken by the best Archer, ten to one it becomes the property of the worst. This is given as a "big word" of encouragement to beginners.

The captain of the target carries a card with ruled lines, the heads of the columns of which correspond with the colours of the concentric circles, and the marginal column for the names or signs of the members; the hits are pierced in their proper places in these cards by a pin, the number and value are summed up at the close of the shooting, and from the card are transferred to the record book of the club by the secretary. This book consists of engraved pages of the circles of the target, and the signs of the members; their presence is marked on the record of the appropriate date, each members' hits on the proper circle, their number of hits and their value, the captain of the target for that day, and, finally, remarks on the weather, &c.

It is the duty of the secretary to keep a record of articles that appear in the public prints, magazines, &c. on Archery; he has in charge, a collection of prints on this subject, the bows and arrows of the different nations of the world. To this portion of the property of the club, we have no delicacy in asking donations, as we need not hesitate to avow our conviction, that articles of this kind, have much more interest collectively, and as the property of an association, than they can possibly have while detached, or hidden in the garrets of individuals, to which place they are usually consigned, after the first keen edge of curiosity is worn off.

To each member of the association is assigned a mark as his descriptive badge, as follows:



It is placed on his bow and arrows, and usually on all the articles of his equipment; it designates his hits on the card, and in the record book, and is used whenever individuality is to be expressed; its object is convenience in saving the necessity of writing names, and the uncertainty of initials.

For the sake, also, of easy distinction, especially in the case of arrows, it is usual for every member to select a colour, and to adhere to its use in painting his arrows or other articles; one individual has selected red, another blue, a third green, a fourth yellow, and so on.

No uniform has been adopted by the club, nor is it essential; for the sake of convenience, a light jacket is worn, which, for the same reason, with the addition of neatness, has been made of a uniform colour and fashion.

The object of this club being expressly that of healthful exercise and manly recreation alone, one of its *understood*, though most decided regulations is, that nothing but water can be drank at its meetings, and that nothing foreign to the practice of Archery can be recognised, as an object of their association.

It is no part of my intention to give instructions in Archery; the space that could be allowed in a work like

whether the horse be qualified by nature to fulfil the intentions of the owner. The age and strength of the animal have not been taken into consideration; and his incapacity to undergo the fatigue allotted to him, although proceeding from weakness, has very incorrectly been ascribed to stubbornness and obstinacy. Resistance, as may be expected, has been the natural consequence; harsher usage has followed; the temper of the animal has become soured; and he has really imbibed a vicious character, which, at the onset, was only imaginary. The result has been open warfare between him and his rider; in which the latter seldom gained an ascendancy; and the former has never been duly trained for the purpose for which he was destined; indeed, he has frequently been rendered quite unserviceable, and become afterwards a drug in the market, though nature had intended him to be useful in many capacities, which, under judicious management, would doubtless have been realised.

The nature of instruction requires that he who teaches should be intelligent, and know how to make himself understood by his pupils, otherwise little good can be attained. This is more essentially requisite in the rearing and tuition of an irrational animal. When the teacher knows but little himself, or has not the talent of imparting knowledge to his scholars, the design of education is not fulfilled, and coercive measures only aggravate the evil. A parity of reasoning will hold good with horses.

For a long series of years I have been in the habit of making observations on the errors committed in the usual treatment and training of horses; and I am convinced, from experience deduced by long study of the nature of horses, and continual intercourse with them, that mild discipline is the *sine qua non* of stable-management, and it is the interest of every proprietor to see it enforced. Patience and good temper are cardinal requisites in a groom. Horses have very retentive memories, and seldom forget the unruly tricks or habits acquired from improper and hasty handling.

I have just observed that crib-biting is oftentimes caused by improper dressing. It also very generally dates its origin, according to the observations I have personally made, to want of employment, as well as to imitation.

Bad habits usually result from idleness. If we are inveterate smokers or snuff-takers, let us ask ourselves the reason of our indulgence in these propensities? For the moment, probably, we cannot account for them; but, after a little reflection, are free to admit, that imitation and too much leisure are the causes; and custom has tended to root us so firmly to these habits, that to be debarred their indulgence, would to many persons be downright misery. As with man, so it is with the horse.

A crib-biter, or wind-sucker, should never be turned out to grass promiscuously with other horses, for he most assuredly will get at the land marks and gates; and, whilst indulging in his propensity, will naturally attract the notice of his companions. Imitation, as I said before, is one of the leading inducements to this destructive habit. I was once an eye-witness to the fact of a horse, when in the field, drawing the attention of four others from amongst the number grazing, to his actions. They alternately began, first to smell, and then to nibble at the place moistened by the saliva of their comrade, and, as I prognosticated at the time, became afterwards confirmed crib-biters.

A horse, from want of exercise, will often take to cribbing from sheer idleness, or too much confinement in the stable; and the abominable practice of tying the head to the rack, produces, particularly in young high-couraged horses, an impatient restlessness. Some show their dislike of the restraint by continual kicking with one or other of the hind legs; others, by licking and nibbling the rack or manger, till they imbibe a professed attachment to the vice, more especially if, in the adjacent stall, they have a companion addicted to crib-biting, and themselves a nice soft deal manger, inviting them to enter upon their noviciate.

Confinement in the stable for too long a period, has a similar effect on the horse, as too great an indulgence of bed has on the human frame—it produces general debility and weakness. My advice is, when the horse be not wanted for service, to give him walking exercise in the open air, three or four hours a day, allowing him plenty to eat and drink; and if this do not keep him hale and fit for use, why, *get rid of him*, as, to borrow a stable phrase, "he must be rotten." When the weather will not permit of exercise in the dry, put on a soft bit with players, for two hours in the morning, and two hours in the afternoon; by an adherence to which rule digestion is promoted, the loss of exercise compensated, and, by the amusement the horse finds in the bit, he is not only kept out of mischief, but the carriage of the head is greatly facilitated. Exercise improves the appetite and strengthens the powers of digestion in a surprising manner; hunger becomes keen; and food is taken with eager relish, which is well known to be one of the best signs of health.

[To be continued.]

QUADRUPEDS.

Of the two hundred species of Quadrupeds which Buffon supposes to exist, he calculates, that about ninety are original inhabitants of the Old Continent, and about seventy of the New, and that forty may be accounted common to both. Since the period when he wrote, the number of species has been much increased.

VARYING HARE.

AMERICAN VARYING HARE.

LEPUS VIRGINIANUS.—Harlan.

Varying Hare, Pennant Quad. Warden Descrip. U. S. v. p. 635. Lewis & Clarke, 2. p. 178. *Lepus Virginianus*, Harlan. Faun. am. 196, 300. *Prairie Hare*, Richardson, Faun. am. bor.—Philadelphia Museum.

Few of the genera of quadrupeds present more obstacles to the naturalist, than that of Lepus; among the species of which there are so many points of similarity and almost identity, that it is a task of no slight difficulty to distinguish whether the differential characters which have been assigned to them, are really specific, or only arise from the modifying influence of climate and habitat. But although the several species of this genus are so analogous as to constitute one of the most natural groups of the mammalia, they are spread over a wide extent of the globe, exhibiting, however, in every country, the same characteristics. When we consider the great and almost incredible changes that are wrought in the external configuration and habits of animals by change of residence, and the effects of domestication, it must be evident that it is often impossible to determine whether the apparent differences between animals arise from their descent from various parent stocks, or have been produced by the gradual operation of extrinsic causes. Thus, when the natural history of any one of our domestic animals, as the sheep for example, is sufficiently known; when we find, on its transportation from one climate to another, that changes are produced, apparently amounting to specific differences, it becomes exceedingly difficult to assign any limits to this operation of nature, and to decide, in an absolute manner, between the analogy and affinity of animals. These observations apply with great force to the genus under consideration, from the striking similarity that exists between the species composing it, species, however, it should be recollected, sanctioned by the highest names in zoology.

As the resemblance of the various species to the common type is almost as strong in their habits and manners as in external characters, what we shall notice in speaking of the genus is applicable, in a great measure, to the individual which now engages our attention.

The Hares belong to the great order of Rodentia or Gnawers; they are distinguished by the number and singular arrangement of their upper incisor teeth, the structure of their head, and many other organic peculiarities. The head is narrow and compressed, with a rather acute snout; the eyes large, prominent, and placed laterally; the ears are long, and placed close to each other. The upper lip is cleft, and the inside of the cheeks covered with hair; in each groin there is a fold of skin, that forms a kind of pouch. The fore legs are short, and have five toes, covered with a soft velvety hair; the hinder legs are very long, and have only four toes, the soles of which are furnished with hair, analogous to the anterior feet. There are twenty-eight teeth—incisors $\frac{4}{2}$, molar $\frac{12}{10}$. The upper incisors are double, that is, there are two rows, one behind the other, the posterior of which is the smaller; and at one moment, when they are changing their teeth, they appear to have three rows or six upper incisors.

There is one very remarkable anatomical peculiarity in this genus; the females are furnished with a double matrix, so that two contemporaneous fecundations can go on together; this peculiarity of form also accounts for these animals being so extremely prolific. They are capable of reproduction at a very early age, and produce young every thirty days, having from two to five at a birth.

According to the Mosaic ordinances, these animals are placed among the ruminants. This arose, perhaps, from the stomach appearing double, owing to a peculiar fold in it; added to which, the cœcum is so large that, in the infancy of anatomical knowledge, it might readily have been mistaken for a second stomach; the Hare genus have also the habit of keeping their under lip in constant motion, giving the semblance of rumination. But, although forbidden to be eaten by the Jews, and even by the ancient Britons, the flesh of the Hare appears to have been held in great esteem by the epicures of Rome; thus, Martial says, "*Inter quadrupedes gloria prima Lepus*," and Horace, who is no slight authority as regards the pleasures of the table, gives it as his opinion, that every man of taste must prefer the fore leg: "*Fecunditur Leporis sapiens sectabitur armos.*"

The eye of the Hare has no accessory organ, and the pupil is elongated horizontally; their nostrils are nearly circular, and almost hidden in a fold, so that they can be closed. The ears of all the species are very large, and are also capable of being closed at the will of the animal. The voice of these animals is seldom or never heard, except when they are irritated or wounded, when they utter a loud piercing cry, bearing some resemblance to that of a child in pain. Although exceedingly timid and watchful, the Hare is capable of being domesticated, and even taught a variety of tricks. One was exhibited in London, some time since, which could play on the tambourine, discharge a pistol, and perform a variety of other feats of as strange a character for an animal of so fearful a disposition.

From the great length of the hinder legs, the gait of the Hare is a succession of leaps, or an interrupted gallop; like all animals of this conformation they sit on the tarsi of the hinder feet, and use the anterior extremities to convey food

to the mouth, to cleanse their fur, &c. They drink by lapping. This length of the hinder limbs also enables them to ascend declivities with great speed. They feed on vegetables, and are very destructive to bark of young trees.

One of the most remarkable peculiarities of this genus is the difference of habits between some of the species, closely allied as they are in their physical appearance. Thus, the Rabbit and the Hare, although furnished with analogous organs, and inhabiting in many instances the same countries, manifest the greatest aversion for each other, a hatred which M. F. Cuvier asserts nothing can obliterate, for, however nearly they are assimilated in form or character, they never associate; and, when they meet, a combat generally ensues, which often terminates fatally to one of the parties.

One striking point of dissimilarity between the Hare and Rabbit is, that whilst the Hare merely forms a shallow hollow in the earth for her form or nest, the Rabbit excavates deep and tortuous burrows. These subterranean habitations have several entrances, and are inhabited by many individuals, though all of the same family. It has been stated by those conversant with the subject, that these burrows descend from generation to generation. This respect for succession of property, although asserted for ages, has never been disproved by modern zoologists, strange and almost incredible as it appears to be. La Fontaine has alluded to it in one of his fables:

> "Jean Lapin allegua la coutume et l'usage,
> Ce sont leurs lois, dit il, qui m'ont de ce logis
> Rendu maitre et seigneur, et qui, de pere en fils
> L'ait de Pierre á Simon, puis a moi Jean transmis.

The Rabbit is thought to have been originally a native of Spain, but has been common in the rest of Europe for ages. By domestication the colours of this species, as of all others which have been reclaimed by man, are very various, some individuals being black, others lead coloured, &c. one variety, called Angora Rabbits, is furnished with long silky hair.

All the species of the genus Lepus hitherto discovered in North America, have the habits of the Hare, though they are generally called Rabbits. We will at present confine our observations to the subject of our illustration, which has given rise to some diversity of opinion among naturalists, though it has long been known to hunters and fur traders as different from the common species. As was the case with almost all the American animals resembling those of the old continent, early naturalists considered it as identical with the analogous European species. The first description given of it in any detail is by Hearne. "The *varying* hares are numerous, and extend as far as latitude 72° N. and probably farther. They delight most in rocky and stony places, near the borders of woods, though many of them brave the coldest winters on entirely barren ground. In summer they are nearly of the colour of our English wild rabbit, but in winter assume a most delicate white all over, except the tips of the ears, which are black. They are, when full grown, and in good condition, very large, many of them weighing fourteen or fifteen pounds."*

This account agrees very well with that of Lewis and Clarke; these authors state: "The Hare on the western side of the Rocky Mountains inhabits the great plains of the Columbia. On the eastward of those mountains they inhabit the plains of the Missouri. They weigh from seven to eleven pounds; the eye is large and prominent, the pupil of a deep sea green, occupying one-third of the diameter of the eye; the iris is of a bright yellow and silver colour; the ears are placed far back and near each other, which the animal can, with surprising ease and quickness, dilate and throw forward, or contract and hold upon his back at pleasure; the head, neck, and back, shoulders and outer parts of the legs and thighs, are of a lead colour; the sides, as they approach the belly, become gradually more white; the belly, breast, and inner parts of the legs and thighs are white, with a light shade of lead colour; the tail is round and bluntly pointed, covered with white soft fur. The colours here described are those which the animal assumes from the middle of April to the middle of November, the rest of the year he is of a pure white, except the black and reddish brown of the ears, which never changes. A few reddish brown spots are sometimes mixed with the white at this season, (the winter,) on their heads and upper parts of their necks and shoulders; the body of the animal is smaller and longer, in proportion to its height, than the rabbit; when he runs he conveys his tail straight behind, in the direction of his body."†

The next person who mentioned this animal is Warden; he observes, "the varying Hare, of the southern parts of the United States, is distinguished from the American Rabbit, by changing from a gray brown, which is its colour in spring and summer, to a full white in winter. Its ears are also shorter and marked with black, and its legs more slender. The largest varying Hares are about eighteen inches long, and weigh from seven to eight pounds."‡

Notwithstanding these notices, the American Varying Hare remained undistinguished by naturalists; or, at most, was considered as a mere variety, until the publication of the Fauna Americana, by Dr. Harlan, when he designated it as a new species under the name of "*virginianus*," giving the following as its essential characters: "Grayish brown

* Journey to the Northern Ocean, by Samuel Hearne, in the years 1769-72.
† Travels to the Pacific Ocean in 1804-6, by Captains Lewis and Clarke.
‡ Account of the United States, by D. B. Warden.

in summer, white in winter; the orbits of the eyes surrounded by a reddish fawn colour at all times; ears and head of nearly equal length; tail very short."*

Dr. Godman, however, doubts the propriety of erecting this into a new species, on the ground of the differential characters adduced not being sufficient. "When," says he, "we compare this animal with the polar hare, *L. glacialis* Sabine, and with the *L. variabilis*, or Alpine hare, we shall be convinced that distinctive characters have not yet been given to establish the supposed new species, as well as that such distinctive characters are very few and difficult of discovery." We fully agree with this author as to the want of character in the specific description, and that taking this alone, there would not, perhaps, be any just grounds for elevating it into a new species. But, at the same time, as we have before observed, the species of the genus Lepus resemble each other so closely, that it is almost impossible to determine what should be assumed as differential characters. The author of the Fauna Americana, it should be stated, has the strong support of Dr. Richardson, in corroboration of the validity of his species. This author makes an observation in his account of it, however, which may lead to error—that the identity of the specimen described by Dr. Godman, with the *L. virginianus* of Dr. Harlan, has not been ascertained; now, if we mistake not, both these authors drew up their accounts from the same specimens; thus, the former says, "Through the kindness of that zealous friend of science, Charles L. Buonaparte, we have had an opportunity of examining and preparing a description of a hare, from specimens in winter and summer pelage, belonging to his valuable collection;" and the latter observes, "The above description is taken principally from a prepared specimen in the possession of Mr. C. Buonaparte."

Before attempting to compare this animal with the other American species, we will give a description of the specimen from which our illustration was drawn. This individual was obtained by Mr. Titian R. Peale, in the State of Maine, late in the autumn; it is evident that the change in the colour of the hair has not taken place, and hence no character can be drawn from this, as it presents a mixture of both coats.

Size—larger than the common American Hare. *Fur*—forehead, cheeks, and back reddish brown, darker on the posterior parts of the body. These hairs are coloured as follows—plumbeous at base, then light yellow, then dusky, then reddish brown, and, finally, blackish at tip. Under jaw white, and this colour extends backwards as far as the bases of the ears. Belly and legs whitish, here and there tinged with light reddish brown; some irregular white spots on the back. *Tail* white beneath, light lead colour above. *Ears* whitish, tinged with reddish brown internally; whitish with a darker reddish brown border on their anterior margin externally, tip brownish black. Orbits of the eye surrounded with a reddish brown. *Whiskers*, some of the hairs entirely white, others wholly black, and some black at base and white at tip. Feet, covered with a thick brush, which is of a soiled yellowish white, intermixed on top with reddish brown; fore toes short, claws white, long, not much curved, and resembling those of the common American Hare; hinder toes large, spreading. Our description being taken from a stuffed specimen, we are unable to give correct measurements, or to say any thing about the weight, these, however, are very fallacious guides, as all the authors we have quoted give great latitude in this respect. The ears, also, are so much contracted by drying as to be much shorter than the head.

That this species may be compared with the Polar Hare, *(L. glacialis,)* we subjoin a description of the latter as given by Sabine. "The Polar Hare is larger than the *variabilis*. Its colour, in winter dress, is white, having the ears black at tip, and longer than the head. The nails are strong, broad, and depressed. The ears are longer in proportion to the head, than those of the common Hare, *(L. timidus,)* and much longer than those of the Alpine Hare, *(L. variabilis.)* The fore teeth are curves of a much larger circle, and the orbits of the eye project much more than those of either of the other species; the claws are broad, depressed, and strong, those of the *L. timidus* and *L. variabilis*, on the contrary, are weak and compressed."

Thus it will be seen that the species under consideration differs from the *glacialis:* in the length of its ears, in the form and strength of its nails, and in the reddish brown margin of the ears, which are never found in the Polar Hare in its winter dress. As respects the fawn coloured ring surrounding the orbits of the eyes, we are unable to speak from actual observation, except in the specimen under consideration, Dr. Godman, however, thinks that this does not always exist. The nearest approach of this species is certainly to the *variabilis* of the old continent, from which it nevertheless appears to be distinct, in many particulars of its form and habits.

The American Varying Hare appears to inhabit a great portion of North America, as it has been found in Virginia, and as far north as 55 degrees, whilst eastward it is found on the great plains of the Colombia. It appears generally to frequent plains and low grounds, where it lives like the common Hare, never burrowing, but does not resort to the thick woods. The *variabilis* of Europe, on the contrary, is described as always inhabiting the highest mountains, and never descending into the plains, except when forced

* Fauna Americana, &c. by R. Harlan, M. D.

to seek for food, when the mountains are covered with snow. The American species is remarkably swift, never taking shelter when pursued, and is capable of taking astonishing leaps; Captain Lewis measured some of these, and found their length to be from eighteen to twenty-one feet. The *variabilis* is said, on the other hand, to be rather slow in its motions, and, when alarmed, to seek for refuge in clefts of the rocks. Warden, however, states that the *virginianus*, when pursued, will retreat into hollow trees.

They, like all the Hares, are very prolific, the female having several litters a year, of five or six leverets at a time.

ON THE GROWTH OF TREES.

One of the most obvious contrasts presented by the vegetable kingdom, is between the tribes that rapidly expand their foliage, and push up their flower-bearing stems, and by bringing their fruit to perfection, fulfil the purpose of their creation in the space of a few months, or even weeks, and those monarchs of the forest which bear aloft their majestic branches in the air, and see centuries passing by them, while generation after generation of herbs, and even men, are perishing at their feet. One would think that if any thing could indicate a difference of organization, it would be peculiarities like these. In fact, if we examine one of these vegetable colossi, which storms or other accidents have levelled with the earth that was so long overshadowed by its branches, we perceive that its interior consists of a solid, compact, homogeneous substance, which seems to be analogous to nothing in the annual plant; we also see, however, that a section of this substance is marked by concentric circles. In order to ascertain the origin of these circles, it is necessary to revert to the seeds, which such a tree produces in vast abundance. There we discover the same parts as in the annual plants; two cotyledones; a cylinder, which attempts to fix itself in the earth by the production of roots; and an intermediate bud. The impulse once given to its development, this seed, with its apparently feeble resources, will become in the lapse of years and ages similar to that giant which produced it. In the leaves and buds consist the sources of its magnitude; the former being under the necessity, on the one hand, of coming into contact with air, and on the other, of establishing a communication with the soil, establish the action of vegetation. The first year passes on as in the annual plant, except that the parts of the tree are unfolded with less rapidity, and that the buds present neither flowers nor fruit, but a tree covered with scales. Upon the arrival of winter the annual perishes, the tree loses only its leaves. As soon as the season again becomes milder, vegetation, which had been suspended, is renewed; the buds insensibly expand, and the unfolding of new leaves gives a new life to the plant; each of these leaves is accompanied by its bud. Thus each successive season, producing a mass of foliage, which increases by a rapid geometrical progression, and an equal number of new buds, occasions the formation of a new body of ligneous substance, which overlays the whole body, and thus forms the whole tree into a kind of cone.

The whole mass of the wood is thus composed of thin successive cones. They are easily perceived in many trees, and it is they which form those concentric circles observable in a trunk cut across. Each circle, depending wholly upon the increase caused by the return of successive seasons, becomes a sure testimony of the age of the tree.

The principal part of our trees exhibits these laws of development. The buds may be more or less apparent; and the scales which enclose them may be more or less numerous, being increased in number in proportion to the greater sensibility of the organs which they enclose. For a more sure protection, the scales are often covered with glutinous or resinous exudations. But even with this safeguard, the fostering hand of nature does not rest. Thick furs are frequently interposed during the winter among the buds, and thrown over the tender shoots.

By this means the buds remain safely upon the tree. We generally remark one which is a termination of the branch and which will the following year prolong the branch in its original direction; all the others are seated at the axillæ of the leaves.

Trees present many peculiarities, which depend upon their woody state. The pith, which occupies the centre of young plants, disappears in trees. It is probable that, besides the increase in diameter which takes place externally, some peculiar operation goes forward in the inside, and that the solid layers of wood compress the pith in such a way as to leave scarcely any traces behind. Around it vegetation is evidently maintained for a long time, as is shown by the green tinge which surrounds it. Larger and more obvious vessels are placed about it than elsewhere, and constitute what is called the étui médullaire by the French, which there is reason to think is one of the most important accessories of vegetation.

The wood does not at once arrive at that solidity which it subsequently possesses, but acquires it by slow degrees, from the centre to the circumference. For this reason the external layers are much less compact, and paler than the internal; they are called the alburnum. Dutrochet accounts for this difference in the old and new layers of wood with his usual sagacity. He is of opinion that a portion of the

sap, elaborated and sent downwards by the leaves under the state of proper juice, is absorbed laterally by means of the radiating vessels, or gilver grain, and is gradually deposited in the originally empty vessels of the wood; that the compactness and weight of wood depend upon these juices so deposited, and not upon any constitutional difference in the wood itself; and that in certain trees, which are remarkably light, as the poplar, no deposit, or scarcely any, takes place.

The bark also undergoes material changes in the course of time. The first branches which are produced are green, like the leaves; their colour being occasioned by the transparency of the epidermis, which allows the cellular tissue, or the parenchyma, to show through. By slow degrees the epidermis thickens, and assumes a deeper colour, under which appearance it is seen in the winter season. If it is raised up, the green colour of the parenchyma is still manifest enough beneath it. The epidermis necessarily gives way gradually to the growth of the tree, and splitting in various directions is replaced by another; and by slow degrees new layers are formed, and burst in various directions. According to the nature of the plant the epidermis also takes a variety of forms, sometimes forming the misshapen knotty crust which is usually called bark, sometimes peeling off in thin layers, and occasionally falling from the parent tree in hard flakes.

It is probable that the bark performs the same functions as the leaves, in the early state of the buds, and occasionally in all states. Otherwise it would not be easy to account for the growth of cacti, euphorbias, some apocineous plants, &c. which are all destitute of leaves. In fine, the bark may be compared to a universal leaf, with one surface only.

We have seen what ingenious methods nature adopts to screen the buds from the rigour of winter; but in countries where there is no winter no defence is requisite. These protecting scales diminish, therefore, by degrees, as we approach the equator. In the trees which cover countries in such a latitude, the buds break forth at once into leaves and branches, without regarding the order of seasons. By this circumstance the apparent difference between trees and herbs is removed.

In like manner, insensible gradations unite the herbs which creep or trail along the ground, and those which carry their heads aloft in the air: the perennial and the annual vegetable. Some exist for two years. The stems of others perish every year, but their roots survive. Some under shrubs scarcely elevate themselves from the soil, yet their slender stems are formed of a firm and woody substance. Next come the shrubs whose branched and entangled stems from bushes. Lastly are perfected the trees, which, from possessing a stem scarcely loftier than the stature of a man, finally dilate themselves till they become the giants of the forest.

We have assigned, as the cause of increase in the bulk of trees, the communication which is established in their system between the leaves and roots. The reciprocity of disposition of these two organs is so strong, that if a bit of a branch of any tree which is robust enough to bear the operation, be placed in the earth, it immediately makes good the loss it has sustained by being dissevered. It presently produces fresh roots, and a new plant is formed. The advantage which is taken of this peculiarity of plants, to propagate them by cuttings or layers, is well known. But this is not all; a bud separated from its parent, and inserted between the bark and the wood of another tree, soon establishes the requisite communication between itself and the earth, and renders the tree which bears it similar in nature to the kind artificially inserted. Hence the origin of budding and grafting in horticulture.

From these observations it has become evident that the life of a plant is a succession of several lives; and that the greater proportion of its parts consists of an intermediate system, which only serves to maintain a communication between the extreme points of the vegetable. If a tree is destroyed by the ravages of time, its death can be only occasioned by the destruction of the intermediate portions of its fabric, by which the channel of continuous communication is effectually interrupted. After such interruption has taken place, the still surviving portions of the tree are capable of furnishing layers or cuttings, which will renew the operation of vegetation with unabated vigour.

The resources of nature are far from being exhausted by these apparent buds; there exists throughout the vegetable system a creative and expansive power, which, according to circumstances, is able to operate in the development of new buds, where none had been visible before. In fact, there is always an abundance of rudimentary buds dispersed among the substance of a tree, which are only called into action when the ordinary resources of nature begin to fail. They are frequently excited very long after the period which had been originally assigned for their appearance; and even in places where no traces of them could have been expected to exist. Thus in all vegetables there appears to be as obvious a line of demarcation in the system, at that point which is called the collar, whence the first ascending fibres direct their course upwards, and the descending downwards. Buds are only produced by the former, and form no part of the economy of the latter. Yet it not unfrequently happens, that roots exposed in a proper degree to the influence of the air will form buds, and throw up shoots, in the same way as the branches. Even the leaves have, in a few cases, a similar power of producing buds, and consequently young plants.

We have now seen that the growth of plants, and their increase in size, depend upon a peculiar internal movement, acting between the leaves and the roots. But in what way does it operate? This is a problem which has exercised the ingenuity of all students of vegetable physiology, who have contrived theories innumerable to explain the phenomenon which is called the circulation of the sap.

The great and almost impenetrable obscurity in which this subject is unavoidably involved, has occasioned much diversity of opinion among phytologists. Grew states two hypothesis, which he seems to have entertained at different periods, though it is not quite certain to which of them he finally gave the preference. In one of them he attributes the ascent of the sap to its volatile and magnetic nature, aided by the agency of fermentation; but this hypothesis is by much too fanciful to bear the test of serious investigation. In the other he attributes the entrance and first stage of the sap's ascent to the agency of capillary attraction, and accounts for its progress as follows: the portion of the tube that is now swelled with sap, being surrounded with the vesiculæ of the parenchyma, swelled also with sap, which they have taken up by suction or filtration, is consequently so compressed, that the sap therein is forced upwards a second stage, and so on till it reaches the summit of the plants. But, if the vesiculæ of the parenchyma receive their moisture only by suction or filtration, it is plain that there is a stage of ascent beyond which they cannot be thus moistened, and cannot, consequently, act any longer upon the longitudinal tubes. The supposed cause, therefore, is inadequate to the production of the effect.

Malpighi was of opinion that the sap ascends by means of the contraction and dilatation of the air contained in the air vessels. This supposition is perhaps somewhat more plausible than either of Grew's; but, in order to render the cause efficient, it was necessary that the tubes should be furnished with valves, which were accordingly supposed; but of which the existence has been totally disproved by succeeding phytologists. If the stem or branch of a plant is cut transversely, in the bleeding season, it will bleed a little from above as well as from below: and if the stem of any species of spurge is cut in two, a milky juice will exude from both sections in almost any season of the year. Also if a plant is inverted, the stem will become a root, and the root a stem and branches, the sap ascending equally well in a contrary direction through the same vessels; as may readily be proved by planting a willow twig in an inverted position. But these facts are totally incompatible with the existence of valves; and the opinion of Malpighi is consequently proved to be groundless.

The next hypothesis is that of M. De la Hire, who seems to have attempted to account for the phenomenon by combining together the theories of Grew and Malpighi. Believing that the absorption of the sap was occasioned by the spongy parenchyma, which envelopes the longitudinal tubes, he tried to illustrate the subject by means of the experiment of making water to ascend in coarse paper, which it did readily to the height of six inches, and by particular management even to the height of eighteen inches. But, in order to complete the theory, valves were also found to be necessary, and were accordingly summoned to its aid. The sap which was thus absorbed by the root, was supposed to ascend through the woody fibre, by the force of suction, to a certain height; that is, till it got above the first set of valves, which prevented its return backwards; when it was again supposed to be attracted as far before, till it got to the second set of valves, and so on till it got to the top of the plant.

This theory was afterwards adopted by Borelli, who endeavoured to render it more perfect, by bringing to its aid the influence of the condensation and rarefaction of the air and juices of the plant, as a cause of the sap's ascent. And on this principle he endeavoured also to account for the greater force of vegetation in the spring and autumn; because the changes of the atmosphere are then the most frequent under a moderate temperature; while in the summer and winter the changes of the atmosphere are but few, and the air and juices either too much rarefied, or too much condensed, so that the movement of the sap is thus at least prejudicially retarded, if not perhaps wholly suspended. But as this theory, with all its additional modifications, is still but a combination of the theories of Grew and Malpighi, it cannot be regarded as affording a satisfactory solution of the phenomenon of the sap's ascent.

With this impression upon his mind, and with the best qualifications for the undertaking, Du Hamel directed his efforts to the solution of the difficulty, by endeavouring to account for the phenomenon from the agency of heat, and chiefly on the following grounds: because the sap begins to flow more copiously as the warmth of spring returns; because the sap is sometimes found to flow on the south side of a tree before it flows on the north side; that is, on the side exposed to the influence of the sun's heat sooner than on the side deprived of it; because plants may be made to vegetate even in winter, by means of forcing them in a hot-house; and because plants raised in a hot-house produce their fruit earlier than such as vegetate in the open air.

On this intricate but important subject, Linnæus appears to have embraced the opinion of Du Hamel, or an opinion very nearly allied to it, but does not seem to have strengthened it by any new accession of argument, so that none of the hitherto alleged causes can be regarded as adequate to the production of the effect.

According to Saussure, the cause of the sap's ascent is to be found in a peculiar species of irritability, inherent in the sap vessels themselves, and dependant upon vegetable life; in consequence of which they are rendered capable of a certain degree of contraction, according as the internal surface is affected by the application of stimuli, as well as of subsequent dilatation, according as the action of the stimulus subsides: thus admitting and propelling the sap by alternate dilatation and contraction. In order to give elucidation to the subject, let the tube be supposed to consist of an indefinite number of hollow cylinders, united one to another, and let the sap be supposed to enter the first cylinder by suction, or by capillary attraction, or by any other adequate means; then the first cylinder, being excited by the stimulus of the sap, begins gradually to contract, and to propel the contained fluid into the cylinder immediately above it. But the cylinder immediately above it, when acted on in the same manner, is affected in the same manner; and thus the fluid is propelled from cylinder to cylinder, till it reaches the summit of the plant. So also, when the first cylinder has discharged its contents into the second, and is no longer acted upon by the stimulus of the sap, it begins again to be dilated in its original capacity, and prepared for the introsusception of a new portion of fluid. Thus a supply is constantly kept up, and the sap continues to flow.

But Mr. Knight has presented us with another, which, whatever may be its real value, merits at least our particular notice, as coming from an author who stands deservedly high in the list of phytological writers. This theory rests upon the principle of the contraction and dilatation, not of the sap vessels themselves, as in the theory of Saussure, but of what Mr. Knight denominates the silver grain, assisted perhaps by heat and humidity, expanding or condensing the fluids. On the transverse section of the trunk of woody plants, particularly the oak, they appear in the form of the radii of a circle, extending from the pith to the bark; and on the longitudinal cleft or fissure of the trunk of most trees, but particularly the elm, they appear in the form of fragments of thin and vertical laminæ, or plates, interlacing the ascending tubes in a transverse direction, and touching them at short intervals, so as to form with them a sort of irregular wicker-work, or to exhibit the resemblance of a sort of web. Such, then, being the close and complicated union of the plates and longitudinal tubes, the propulsion of the sap in the latter may be easily accounted for, as it is thought, by means of the alternate contraction and dilatation of the former, if we will but allow them to be susceptible to change of temperature; which susceptibility is proved, as it is also thought, from the following facts: on the surface of an oaken plant that was exposed to the influence of the sun's rays, the transverse layers were observed to be so considerably affected by change of temperature as to suggest a belief that organs which were still so restless, now that the tree was dead, could not have been formed to be altogether idle while it was alive. Accordingly, on the surface of the trunk of an oak deprived of part of its bark, the longitudinal clefts and fissures, which were perceptible during the day, were found to close during the night. But in the act of dilating they must press unavoidably on the longitudinal tubes, and consequently propel the sap; while in the act of contracting they again allow the tubes to expand and take in a new supply. This is the substance of the theory.

But, in drawing this grand and sweeping conclusion, Keith has well remarked, that it should have been recollected, that change of temperature cannot act upon the transverse layers of a tree that is covered with its bark, in the same manner as it acts upon those of a tree that is stripped of its bark; or upon those of a plank; and if it were even found to act equally upon both, still its action would be but of little avail. For, according to what law is the machinery of the plates to be contracted and dilated, so as to give impulse to the sap? According to the alternate succession of heat and humidity? But this is by much too precarious an alternation to account for the constant, and often rapid, propulsion of the sap, especially at the season of bleeding. For there may be too long a continuance of heat, or there may be too long a continuance of humidity; and what is to become of the plant during this interval of alternation? If we are to regard it as happening only once in the space of twenty-four hours, as in the case of the oak, it can never be of much efficacy in aiding the propulsion of the sap. But if we should even grant more, and admit the alternate contraction and dilatation of the vessels to be as frequent as you please, still their effect would be extremely doubtful, owing to a want of unity or co-operation in the action of different plates, or of different portions of the same plate. If heat, like humidity, entered the plant by the root, and proceeded gradually upwards, like the ascending sap, perhaps it might be somewhat efficacious in carrying a portion of sap along with it; but as this is not the case, and as the roots of plants are but little affected by change of temperature, while the trunk and upper parts may be affected considerably, it can scarcely be supposed that the action of the plates will be uniform throughout the whole plant; or rather, it must be supposed, that it will often be directly in opposition to that which is necessary to the propulsion of the sap. But, admitting that the sap is propelled by the agency of the plates in question, and admitting that it has been thus raised to the extremity of the woody part of the plant, how are we to account for its ascent in such parts

as are yet higher; the leaf-stalk and leaf, the flower-stalk and flower; as well as in the herb also, and in the lofty palm, in which no such plates exist? Here it will be necessary to introduce the agency of a new cause, to complete the work that has been thus begun, and of a new set of machinery to supply the deficiency or absence of the machinery that has been already invented.

How unsatisfactory the best of these theories is, must be self-evident, even to persons unacquainted with the structure of vegetables. Du Petit Thouars has, therefore, proposed a new hypothesis, which to us seems by far the least objectionable. He dismisses the question of the mechanical action by which the motion of the sap is maintained; thinking, with much justice, that no principle of physics, with which we are acquainted, is sufficient to explain it, and he therefore attributes the mere motion to an inherent power, with which nature has been pleased to endow vegetables. But the cause of the renewal of its motion in the spring, after remaining in a quiescent state for several months, he ascribes to the necessity of maintaining a perfect equilibrium in the system of a plant. So that, if a consumption of sap is produced at any given point, the necessity of making good the space so occasioned, consequently throws all the particles of sap into motion, and the same effect will continue to operate as long as any consumption of sap takes place. The first cause of this consumption of sap he declares to be the development of the buds, and already formed young leaves, by the stimulating action of light and heat, but particularly of the latter. As soon as this development occurs, an assimilation and absorption of sap is occasioned, for the support of the young leaves; a vacancy in the immediate vicinity of the leaves is produced, and motion immediately takes place.

We will not occupy ourselves with an explanation of the cause of the descent of the sap: gravitation will serve the purpose, in the room of a more plausible conjecture.

But, notwithstanding all the differences which exist among trees, they approach each other by insensible degrees; and yet they individually retain a peculiar set of characters, and a physiognomy, which botanists call habit, that renders it easy to distinguish them at great distances; and more easy to eyes habituated to the sight of them, by practice and long familiarity, than by the aid of theory.

Buffon's Nat. Hist.

CARBONATED SPRINGS.

Carbonic acid gas is very plentifully disengaged from springs in almost all countries, but particularly near active or extinct volcanos. This elastic fluid has the property of decomposing many of the hardest rocks with which it comes in contact, particularly that numerous class in whose composition felspar is an ingredient. It renders the oxide of iron soluble in water, and contributes, as was before stated, to the solution of calcareous matter. In volcanic districts, these gaseous emanations are not confined to springs, but rise up in the state of pure gas from the soil in various places. The Grotto delle Cane, near Naples, affords an example, and prodigious quantities are now annually disengaged from every part of the Limagne d'Auvergne, where it appears to have been developed in equal quantity from time immemorial. As the acid is invisible, it is not observed, except an excavation be made, wherein it immediately accumulates so that it will extinguish a candle. There are some springs in this district, where the water is seen bubbling and boiling up with much noise, in consequence of the abundant disengagement of this gas. The whole vegetation is affected, and many trees, such as the walnut, flourish more luxuriantly than they would otherwise do in the same soil and climate,—the leaves probably absorbing carbonic acid. This gas is found in springs rising through the granite near Clermont, as well as in the tertiary limestones of the Limagne. In the environs of Pont-Gibaud, not far from Clermont, a rock belonging to the gneiss formation, in which lead-mines are worked, has been found to be quite saturated with carbonic acid gas, which is constantly disengaged. The carbonates of iron, lime, and manganese are so dissolved, that the rock is rendered soft, and the quartz alone remains unattacked. Not far off is the small volcanic cone of Chaluzet, which once broke up through the gneiss, and sent forth a lava stream.

The disintegration of granite is a striking feature of large districts in Auvergne, especially in the neighbourhood of Clermont. This decay was called, by Dolomieu, "la maladie du granite;" and the rock may with propriety be said to have *the rot*, for it crumbles to pieces in the hand. The phenomenon may, without doubt, be ascribed to the continual disengagement of carbonic acid gas from numerous fissures. In the plains of the Po, between Verona and Parma, especially at Villa Franca, south of Mantua, I observed great beds of alluvium, consisting chiefly of primary pebbles percolated by spring water, charged with carbonate of lime and carbonic acid in great abundance. They are, for the most part, encrusted with calc-sinter; and the rounded blocks of gneiss, which have all the appearance of solidity, have been so disintegrated by the carbonic acid as readily to fall to pieces. The Po and other rivers, in winding through this plain, might now remove with ease those masses which, at a more remote period, the stream was unable to carry farther towards the sea; and in this example we may perceive how necessary it is, in reasoning on

the transporting power of running water, to consider all the numerous agents which may co-operate in the lapse of ages, in conveying the wreck of mountains to the sea. A granite block might remain stationary for ages, and defy the power of a large river; till at length a small spring may break out, surcharged with carbonic acid,—the rock may be decomposed, and a streamlet may transport the whole mass to the ocean.

The subtraction of many of the elements of rocks by the solvent power of carbonic acid, ascending both in a gaseous state and mixed with spring-water in the crevices of rocks, must be one of the most powerful sources of those internal changes and re-arrangement of particles so often observed in strata of every age. The calcareous matter, for example, of shells, is often entirely removed and replaced by carbonate of iron, pyrites, or silex, or some other ingredient, such as mineral waters usually contain in solution. It rarely happens, except in limestone rocks, that the carbonic acid can dissolve all the constituent parts of the mass; and for this reason, probably, calcareous rocks are almost the only ones in which great caverns and long winding passages are found. The grottos and subterranean passages, in certain lava-currents, are due to a different cause, and will be spoken of in another place. *Lyell's Geology.*

ERUPTION OF JORULLO IN 1759.

As another example of the stupendous scale of modern volcanic eruptions, we may mention that of Jorullo, in Mexico, in 1759. We have already described the great region to which this mountain belongs. The plain of Malpais forms part of an elevated plateau, between two and three thousand feet above the level of the sea, and is bounded by hills composed of basalt, trachyte, and volcanic tuff, clearly indicating that the country had previously, though probably at a remote period, been the theatre of igneous action. From the era of the discovery of the New World to the middle of the last century, the district had remained undisturbed, and the space, now the site of the volcano, which is thirty-six leagues distant from the nearest sea, was occupied by fertile fields of sugar-cane and indigo, and watered by the two brooks Cuitimba and San Pedro. In the month of June, 1759, hollow sounds of an alarming nature were heard, and earthquakes succeeded each other for two months, until, in September, flames issued from the ground, and fragments of burning rocks were thrown to prodigious heights. Six volcanic cones, composed of scoriæ and fragmentary lava, were formed on the line of a chasm which ran in the direction from N.N.E. to S.S.W. The least of these cones was three hundred feet in height, and Jorullo, the central volcano, was elevated one thousand six hundred feet above the level of the plain. It sent forth great streams of basaltic lava, containing included fragments of primitive rocks, and its ejections did not cease till the month of February, 1760. Humboldt visited the country twenty years after the occurrence, and was informed by the Indians, that when they returned long after the catastrophe to the plain, they found the ground uninhabitable from the excessive heat. When the Prussian traveller himself visited the locality, there appeared, round the base of the cones, and spreading from them as from a centre over an extent of four square miles, a mass of matter five hundred and fifty feet in height, in a convex form, gradually sloping in all directions towards the plain. This mass was still in a heated state, the temperature in the fissures being sufficient to light a cigar at the depth of a few inches. On this convex protuberance were thousands of flattish conical mounds, from six to nine feet high, which, as well as large fissures traversing the plain, acted as fumeroles, giving out clouds of sulphuric acid and hot aqueous vapour. The two small rivers before mentioned disappeared during the eruption, losing themselves below the eastern extremity of the plain, and re-appearing as hot springs at its western limit. Humboldt attributed the convexity of the plain to inflation from below, supposing the ground, for four square miles in extent, to have risen up in the shape of a bladder, to the elevation of five hundred and fifty feet above the plain in the highest part. But this theory, which is entirely unsupported by analogy, is by no means borne out by the facts described; and it is the more necessary to scrutinize closely the proofs relied on, because the opinion of Humboldt appears to have been received as if founded on direct observation, and has been made the groundwork of other bold and extraordinary theories. Mr. Scrope has suggested that the phenomena may be accounted for far more naturally, by supposing that lava flowing simultaneously from the different orifices, and principally from Jorullo, united into a sort of pool or lake. As they were poured forth on a surface previously flat, they would, if their liquidity was not very great, remain thickest and deepest near their source, and diminish in bulk from thence towards the limits of the space which they covered. Fresh supplies were probably emitted successively during the course of an eruption which lasted a year, and some of these resting on those first emitted, might only spread to a small distance from the foot of the cone, where they would necessarily accumulate to a great height.

The showers, also, of loose and pulverulent matter from the six craters, and principally from Jorullo, would be composed of heavier and more bulky particles near the cones, and would raise the ground at their base, where, mixing

with rain, they might have given rise to the stratum of black clay which is described as covering the lava. The small conical mounds (called "hornitos" or ovens) may resemble those five or six small hillocks which existed in 1823, on the Vesuvian lava, and sent forth columns of vapour, having been produced by the disengagement of elastic fluids heaving up small dome-shaped masses of lava. The fissures mentioned by Humboldt as of frequent occurrence, are such as might naturally accompany the consolidation of a thick bed of lava, contracting as it congeals; and the disappearance of rivers is the usual result of the occupation of the lower part of a valley or plain by lava, of which there are many beautiful examples in the old lava-currents of Auvergne. The heat of the "hornitos" is stated to have diminished from the first, and Mr. Bullock, who visited the spot many years after Humboldt, found the temperature of the hot spring very low, a fact which seems clearly to indicate the gradual congelation of a subjacent bed of lava, which, from its immense thickness, may have been enabled to retain its heat for half a century.

Another argument adduced in support of the theory of inflation from below, was the hollow sound made by the steps of a horse upon the plain, which, however, proves nothing more than that the materials of which the convex mass is composed are light and porous. The sound called "rimbombo" by the Italians, is very commonly returned by *made ground*, when struck sharply, and has been observed not only on the sides of Vesuvius and other volcanic cones where there is a cavity below, but in plains such as the Campagna di Roma, composed in great measure of tuff and porous volcanic rocks. The reverberation, however, may, perhaps, be assisted by grottos and caverns, for these may be as numerous in the lavas of Jorullo, as in many of those of Ætna: but their existence would lend no countenance to the hypothesis of a great arched cavity, or bubble, four square miles in extent, and in the centre five hundred and fifty feet high. A subsequent eruption of Jorullo happened in 1819, accompanied by an earthquake; but unfortunately no European travellers have since visited the spot, and the only facts hitherto known are that ashes fell at the city of Guanaxuato, which is distant about one hundred and forty English miles from Jorullo, in such quantities as to lie six inches deep in the streets, and the tower of the cathedral of Guadalaxara was thrown down. *Lyell.*

BLACK GROUSE.

The Black Grouse, *black game*, or *black cock*, (*tetrao tetrix*,) though inferior in size to the cock of the woods, is still a bird of considerable dimensions, being much larger than the red grouse; and when full-grown, larger than the pheasant. The black cock is a very handsome bird; the general colour is black, but it is irridescent, and in certain positions of the light shows a very fine purple. The tail is very much forked, the outside feathers curled, and the lower part, towards the base, white. Upon the throat there is a kind of down, but no long or regularly-formed feathers. The length of the male bird is about twenty-eight inches, and the extent of the wings nearly three feet; and the weight between three and four pounds. The female is a much smaller bird, and has not the curled feathers in the tail.

Though the places at which the Black Grouse is found are not quite so elevated—so near to the summits of the mountains as the habitations of the ptarmigan—it is a bird fond of wild and secluded spots; and its numbers in these islands are very fast declining. What with improvements of land, and improvements in the arts of its destruction, it is not nearly so abundant in England as it was formerly; though it be still met with in the more elevated and secluded places in the south of England, in Staffordshire, in North Wales, and generally where there are high and lonely moors. In the Alpine parts of Scotland it is more abundant, though the introduction of sheep, generally, upon the mountains, is said to be diminishing the numbers. The black cocks are more frequently found in the woods than the red grouse, though the moors, with a difference of elevation, be the favorite abodes of both. Their food is also similar; consisting of mountain-berries, the tops of heath, and the buds of pine and other Alpine trees. Though they seek their food in the open places during the day, they, where they have the accommodation of trees, perch during the night like pheasants. It is chiefly during the winter months, however, and the early parts of spring, when all food, save the tops of the pines, is hidden under the snow, that they do that; for when the breeding season commences, they assemble on the tops of the mountains and highest parts of the moors, but never higher than they can find heath; the young shoots and embryo blossoms of which are at that time their principal food.

Some parts of their character resemble that of common poultry. They do not pair; but when the breeding season commences, the cocks ascend to the tops of the mountains, and clap their wings and crow; to which call the females answer, by making their appearance, and uttering a sort of clucking sound. War immediately ensues among the males, as each is anxious to have in his train as many females as possible. Their heels are armed with spurs: their mode of fighting is the same as that of game-cocks, and they enter upon the strife with the same devotedness. Although upon other occasions they are among the shyest of

birds, they are then so intent upon the victory in their own battle, that they do not heed the approach of strangers. Not only may all that are within the spread of a musket-shot be killed at one shot, but they may be struck a second time with a stick, so eager are they for victory among themselves. The nests, like those of most of the gallinaceous birds, are rude; the eggs are usually six or seven; they are of a yellowish white, dotted with very minute ferruginous specks; and about the size of those of the pheasant. The young are produced rather late in the season, but as there is then plenty of food, they grow rapidly. In their early stage they follow the mother, and nestle under her wings in some safe place during the night; but after about five weeks, they have acquired so much strength and use of their wings as to be able to perch along with her. As the winter sets in, the different families leave their mothers, and the whole assemble in flocks like the red grouse. They are never, so far as our observation has gone, found, like those, even in the margins of the cultivated fields, but continue in the mountains during the winter; finding, as is supposed, their food under the snow, and being also often found in their retreats by beasts and birds of prey.

When the snow begins to fall heavy, the black grouse betake themselves to the shelter of tall heath, juniper, or any other plant, that will afford them cover while the violent wind, with which falls of snow are usually accompained in Alpine districts, lasts; or they roost under the thick branches of the pines, in situations where they have access to these. Even upon the pines, the snow forms a close canopy, which lasts for a considerable time, while below there is a sufficiency of air for the breathing of the bird. In the shelter of the bushes they are obliged, like the white hares and other inhabitants of the mountains, to open breathing holes for themselves; and while they are pent up in their habitations of snow, the tops of the heather, or leaves of the bush, find them in food. When the surface becomes hard [which it does in no great length of time after the fall of snow is over, in consequence of the softening of the surface by the action of the sun, and the congealing of it again at night, till it is converted into a crust of smooth ice, and reflects off the greater part of the solar heat obliquely, as the rays then fall upon the surface] those breathing holes often betray their inmates to the ravages of predatory birds and quadrupeds. The mountain-eagles and hawks then fly over the snowy surface, and beat in the same manner for these holes, as they do for the birds themselves when there is no snow upon the ground; and the four-footed ravager, that then find an easy passage along the hard surface, join in the spoil. Man sometimes also takes a part in it, but much less frequently, because there are concealed holes and precipices under the snow, which are full of danger.

But the winds by which the falls of snow in the Alpine countries are accompanied, though they render these formidable to the animals, whether quadruped or bird, while they last, and fatal to man if he be overtaken by them late in the day and far from his home, have yet their uses, and tend in some measure to the preservation of life. Some portions toward the windward are left bare, or at any rate with the tops of the heath and other plants above the surface, and the vigorous find their way to these, and subsist on them till other parts of the surface be clear. When, however, the snow falls in continued storms, and especially with the wind from opposite points during the different falls, the sufferings of the creatures are extreme: first, those that live on vegetables, perish through suffocation or of hunger, and then the carnivorous ones, which can in general subsist longer without food, follow in their turn; and when the snow clears away, the raven comes to enjoy the spoils of both.

These are but a few of the inhabitants of the moor; but moor means so many different kinds of country, according to the situation in which it is placed, that there is no possibility of including in a short space the characters that are common to all. There are comparatively few quadrupeds peculiar to such situations, and the number of insects is not great; the plants, too, though more abundant and more numerous in their species, are not those that are the most striking in their appearance, or the most interesting in their properties.

Alpine hares are sometimes found in the more elevated parts of the higher moors, and the common hare in the lower parts of those that are near the cultivated grounds; but the only quadrupeds which can be considered as natives, and permanent inhabitants of the moors in any part of Britain, are deer; and they properly fall into the description of a more limited and peculiar description of scenery. We must, therefore, even though the subject be merely begun, close our account of this division of the surface of our country. There are other circumstances connected with it in common with other places, to which we can afterwards advert with more effect. What has been mentioned will tend to show that, even in one of its departments, that portion of the earth's surface which, on account of its flatness and its sterility, is the least pleasing or promising, is yet fraught with lessons of the greatest importance, if we would only pause and read them. Nor even when the moor has advanced one step further, and become a desart in the burning climate, or a peat-bog in the cold and marshy one, can we dare to say, that it is without its usefulness. The peat-bog is the coal-field of future times, and the waste of Zahara must have its use, or it would not have existence.

British Naturalist.

TORPIDITY OF THE GROUND SQUIRREL.

GENTLEMEN,

In the eighth number of the Cabinet of Natural History, you have published an account of the habits of the Ground Squirrel, with a correct representation of the same; one of the singular peculiarities of this animal as observed by me is not stated, viz.: its liability to become torpid during very severe weather, a fact which I noticed some five or six years since, in one that a friend of mine had which was kept in a cage, having been captured the preceding summer, and which was admired for its sprightliness and activity in turning a cylindrical wheel attached to the cage; my children had at the same time a flying squirrel.

The difference between them was very apparent, the former practising his gambols on the wheel in day time, the latter only at night; it was proposed to send his Ground Squirrel to my house, in order to ascertain whether they would associate with each other; in the course of a few days afterwards the weather set in very cold, and to my surprise in looking into the cage I found the Ground Squirrel lying on the bottom apparently dead; I immediately took it out, and on examination to ascertain whether it had received an injury, I discovered symptoms of returning animation, produced, no doubt, by the warmth of the house. It was then wrapped in flannel and laid under a moderately heated stove, when in a few minutes it was completely revived, and as lively as ever; this fact was noticed repeatedly afterwards, and always with the same result. Supposing consequently, that this was one of its peculiarities, and having frequently mentioned it to my friends as such, I had some doubts on reading your account whether it was common to this species;* and believing that every fact in relation to the Natural History of our own country might be interesting, I should be pleased to know whether the same has ever been noticed by yourself or any of your correspondents, besides

ONE OF YOUR SUBSCRIBERS.

*This is not a peculiarity of the Ground Squirrel, but is common to other Squirrels, and more particularly to the Bat, Dormouse, Bear, &c. We know of but one author (Pennant, arct. Zool.) who records this fact of the Ground Squirrel, and being found more seldom in this, than others of its genus, we thought it unnecessary to notice it.

It may at all events be considered only a semi-torpid state, as it requires but little warmth to excite action, as we have seen them in all their wonted sprightliness running along the fences on a moderately warm day in January, immediately succeeding a very cold day.

The Squirrel above alluded to, having been placed in circumstances entirely different from its natural state, subjected it to the constant changes of the weather, which produced the effect described; but in its native haunts, where its storehouses are well filled, it possesses the means to excite the functions of vitality, and is only subjected to this semi-torpid state, when its provisions are exhausted.—ED.

SAGACITY OF A GREYHOUND AND POINTER.

A GENTLEMAN in the county of Stirling, Scotland, kept a greyhound and a pointer, and, being fond of coursing, the pointer was accustomed to find the hares, and the greyhound to catch them. When the season was over, it was found that the dogs were in the habit of going out by themselves, and killing the hares for their own amusement. To prevent this, a large iron ring was fastened to the pointer's neck by a leather collar, and hung down, so as to prevent the dog from running or jumping over dykes, &c. The animals, however, continued to stroll out to the fields together; and one day the gentleman, suspecting all was not right, resolved to watch them, and, to his surprise, found that the moment they thought they were unobserved, the greyhound took up the iron ring in his mouth, and, carrying it, they set off to the hills, and began to search for hares as usual. They were followed, and it was observed that, whenever the pointer scented the hare, the ring was dropped, and the greyhound stood ready to pounce upon poor puss the moment the other drove her from her form, but that he uniformly returned to assist his companion when he had accomplished his object.

ANECDOTE OF A FOX.

A party returning from shooting late last season, saw a fox apparently dirty and much distressed, enter a small thicket, which they soon after surrounded, when several spaniels were hied in to unkennel him; but, to the astonishment of all, no fox could be found:—"I have constantly kept my eyes on the brake," said one, "so have I," said another—"his escape," added a third, "without our seeing him, is next to impossible." Whilst wondering at this strange circumstance, an old gentleman, very well mounted, rode up to them, to whom they told the story. "A more game fox," replied the veteran, "never ran on four legs; we have followed him a full hour, mostly at the very height of our speed, and ere this he would probably have breathed his last, but for the rattling of yonder confounded timber carriages, which headed him, and caused a check; however, we have not yet done with him, I trust, for the mystery you speak of somehow or other must be unravelled." Then raising himself on his saddle, and looking forward, with great earnestness, "I have it—I have it, gentlemen," said he, "ten pounds to a shilling, there is an underground communication between the brake and yonder old drain, of which Reynard availed himself." So indeed it proved—the hounds coming up, one of them dashed into the drain, and opening, the others quickly joined, when they all went off with the fury of a tempest, and soon killed their fox on a stopped earth in an adjoining cover.—*Sport. Mag.*

RED TAILED HAWK. AMERICAN SPARROW HAWK.

RED-TAILED HAWK.

FALCO BOREALIS.

[Plate XX.]

Falco Borealis. Gmel. Syst. Nat. Vol. i. p. 266.—Latham. Ind. Ornith. Vol. i. p. 25. Arct. Zool. p. 205, No. 100. Ch. Bonaparte, Synops, p. 32. Wilson, Am. Orn. 2d ed. Vol. i. p. 82. *American Buzzard,* Lath. i. 50. Turt. Syst. p. 151. *F. aquilinus, cauda ferruginea, Great Eagle Hawk,* Bartram, p. 290. Philadelphia Museum.

This species of the Hawk is common throughout the United States, and may be found, during each season of the year, in the Northern, Middle, Western, and Southern States. They descend, in the winter season, in some measure, from the higher latitudes, to less severe climates, and are very abundant in the Middle States. In the lower parts of Pennsylvania and New Jersey, they are more commonly to be seen during the autumn and winter, particularly in the regions of well-cultivated farms and extensive meadows. It is one of the most daring and ravenous of our birds of prey, and not particular as to the kind of food to be devoured. It, however, derives its chief support from rabbits, quails, larks, and poultry; and, in the absence of these, rats, mice, and other vermin. Mr. Audibon remarks, "I have seen this species pounce on soft-shelled tortoises, and amusing enough it was to see the latter scramble towards the water, enter it, and save themselves from the claws of the Hawk by diving. I am not aware that this Hawk is ever successful in these attacks, as I have not on any occasion found any portion of the skin, head, or feet of tortoises, in the stomachs of the many Hawks of this species which I have killed and examined. Several times, however, I have found portions of bull-frogs in their stomachs."

In the autumn, when that interesting and vigilant guardian, the king bird, has ceased its parental duties, and taken its final leave for the southern climate, then it is, that the Red-tailed Hawk may be seen prowling about farm houses, to the terror of the fowls, and consternation of the country dames, whose lamentations at the loss of poultry, and threatenings of revenge, bespeak the ferocity and destructive energies of this common enemy.

The daring boldness of this Hawk is without parallel in its kind. Conscious of the superiority only of man, it seems, guided by instinct, to delay its depredations until the farmer is absent from his home, and then, with a rapid flight, it leaves its seat of observation, and silent as death, with wings motionless, it skims over the top of the orchard, direct for the farm house, appearing to choose this dense collection of foliage to hide it from view, until the first intimation of its approach is resounded from a hundred cackling throats, that the enemy is at hand, and the work of destruction done. By one swoop, scarcely retarded in its progress, this bird of prey seizes its victim in its powerful talons, and bears it off, still alive, and writhing in the agonies of death, to the wood.

The flight of this Hawk is regular and majestic when sailing in the air. In the autumn, when the cooling breezes of the north are playing through the faded leaves of the forests, then may be seen against a cloudless sky, the spiral movements of this bird. At first, it leaves its lofty seat with a few fluttering motions of the wings, and then with motionless and outstretched pinions, it cleaves the air, in a continual circular flight, ascending gradually at every revolution, until it is finally lost to human ken. But when in search of prey, the majesty of the bird is obscured by its predatory designs. Its sight, which is only surpassed by that of the eagle, is most wonderful. Passing rapidly over woods or fields, the slightest motion on the earth or in the grass, is detected by the keenness of its vision; then its progress is immediately retarded by alighting on a neighbouring tree, or making a contracted circular flight over the spot whence the motion proceeded, until the cause which arrested its attention is fully ascertained; and if there be a subject for its appetite, it seldom fails to secure it. When seated on a tree, this Hawk is grave and watchful; its penetrating eye pierces through the thickly matted grass, and with the most intense vigilance, directs its attention to the spot where the prey lies concealed, and by one bound, like lightning it descends to the earth, and with unerring aim, secures the hapless victim.

In the fall of 1826, I was hunting in Jersey, and whilst beating with my dogs an extensive stubble field, my attention was attracted by the well-known screams of the Red-tailed Hawk. I had been unsuccessful on ground which I knew abounded with game, and was at a loss to account for its disappearance, until the cause was made known by the vociferations of this Hawk. Casting my eyes toward the extremity of the field, I discovered one of these birds sailing over that part of it which contained an extensive asparagus bed, where, suddenly the bird's attention was drawn to some object sheltered beneath the density of the asparagus. In a moment its progress was retarded, and balancing itself in the air for a few moments, at the height of perhaps forty feet, it made a sudden plunge into the grass, and there remained. I took advantage of this shelter, and proceeded rapidly towards the spot for the purpose of shooting the Hawk; but ere I reached the desired place, it rose again to the same height in the air as before, and hovered for a con-

siderable time. Having missed its prey in the first attempt, it was now so intent on the object beneath it, that my approach was entirely disregarded. In another moment, and with more fatal aim, it darted into the grass, with a rustling noise, and soon arose with its victim. Being sufficiently near, I shot the Hawk, and secured its prize, which was yet alive. It was a male partridge, and had, with its companions, sought shelter in the asparagus; but with all the well-known ingenuity of these birds, it availed nothing against the penetrating eye of this Hawk.

The voice of the Redtailed Hawk is harsh, and may be heard at a considerable distance. Its ungracious and terrifying screams are the signals for its prey to seek shelter from its talons; but in doing this they commonly fall victims to this artifice of their destroyer. Like the lion howling to affrighten and put in motion the beasts of the forest, that their fears may overcome their instinct, and press them headlong to destruction. So it appears to be a finesse of this Hawk to skim the surface of the ground, and hover around the favourite haunts of its prey, and by those desolating screams, put in motion such of the animals or feathered tribe which may be near, and which, while seeking more secure shelter, are pounced upon and destroyed by their inveterate enemy.

The Red-tailed Hawk is designated by the farmers under the titles of the "Chicken Hawk," and "Hen Hawk," and many artifices are employed to destroy this bird, so injurious to the farmer's poultry yard. The use of the gun more frequently fails in their destruction than other means. Seated, generally, on some detached tree of the wood, or in the middle of a field, on the decayed extremity of a topmost branch, the sphere of vision to this Hawk is very extensive. Naturally shy, and, perhaps, conscious of its depredations, it avoids man as its common and only enemy: consequently, it is exceedingly difficult to approach, and can seldom be done, except through the agency of the horse. In this case, the disposition of the bird appears totally changed, and by some blind fatality, will suffer a man on horseback to pass immediately under the tree on which it sits, without showing signs of fear; but as it is not always convenient and practicable to employ a horse for this purpose, other means are resorted to. A friend of mine, who resides a few miles from Philadelphia, has been very successful in ridding himself of these Hawks, by using steel traps. These he would place in the neighbourhood of those trees usually occupied by the Hawks, and after securing the traps to the earth, he would bate them with a dead fowl, and, sometimes, only the feathers and offals of fowls, and which seldom failed to answer the purpose. He would only resort to this plan after having discovered a Hawk visit the same tree two or three times successively.

During protracted cold weather and deep snows, the ordinary supplies of food are no longer to be obtained by Hawks, and, like other shy and vigilant birds, their ferocity and energies become in a measure subdued, by the severities of the winter. The past winter was one of unusual coldness, and these, as well as other birds, suffered much from its inclemencies. I have heard that a Red-tailed Hawk was seen on the public highway, scratching and gleaning a scanty meal, from among the droppings of the horses, and on the approach of a sleigh with bells, merely avoided it, by flying on the fence by the road side, not more than twenty feet from the passengers, and resumed its former occupation so soon as the sleigh had passed.

The young of the Red-tailed Hawk are very noisy when confined to their nests, keeping up an incessant clamor. They are protected and fed by both parents, until they have attained an age sufficient to shift for themselves, when not only they are forsaken by the parents, but a complete separation of each member of the family takes place, and each becomes selfish and shy towards the other, as though there never existed affinity between them.

The Red-tailed Hawk commences building its nest in February, generally on some tall tree, in an unfrequented wood, which consists of sticks and coarse grass. I do not recollect of ever having seen but two: one was on the northern range of hills which bounds the great valley of Chester county, and the other, in an extensive pine wood, in Jersey. The eggs are commonly four or five in number, of a dirty white and spotted with a dark brown colour; and the following description, by Wilson, so perfectly agrees with the specimen from which our drawing is made, that I have inserted it at length.

"The Red-tailed Hawk is twenty inches long, and three feet nine inches in extent; bill blue black; cere and sides of the mouth yellow, tinged with green; lores and spot on the under eye-lid white, the former marked with fine radiating hairs; eye-brow, or cartilage, a dull eel-skin colour, prominent, projecting over the eye; a broad streak of dark brown extends from the sides of the mouth backwards; crown and hind-head dark brown, seamed with white and ferruginous; sides of the neck dull ferruginous, streaked with brown; eye large; iris pale amber; back and shoulders deep brown; wings dusky, barred with blackish; ends of the five first primaries nearly black; scapularies barred broadly with white and brown; sides of the tail-coverts white, barred with ferruginous, middle ones dark, edged with rust; tail rounded, extending two inches beyond the wings, and of a bright red brown, with a single band of black near the end, and tipped with brownish white; on some of the lateral feathers are slight indications of the remains of other narrow bars; lower parts brownish white; the breast ferruginous, streaked with dark brown; across the belly a band of

interrupted spots of brown; skin white; femorals and vent pale brownish white, the former marked with a few minute heart-shaped spots of brown; legs yellow, feathered half way below the knees."

The male differs from the female in being somewhat smaller and having more brightness of colour throughout its plumage, and a more strongly defined black band across the tail.

We are indebted to the Philadelphia Museum for the use of the beautiful bird from which our drawing is made. It was alive and kept by Mr. T. R. Peale for some time, and afterwards most beautifully prepared by him. I. D.

AMERICAN SPARROW HAWK.

FALCO SPARVERIUS.

[Plate XX. Female.]

Falco Sparverius. Linn. Syst. ed. 10, p. 90. Gmel. Syst. 1, p. 284. Ind. Orn. p. 42.—*Emerillon de St. Domingue,* Buff. 1, 291. Pl. enl. 465. Arct. Zool. 212.—*Little Falcon,* Lath. Syn. V. 1, p. 114, No. 94, ib. 95.—*Little Hawk,* Arct. Zool. 211, No. 110.—*Emerillon de Cayenne,* Buff. 1, 291. Pl. enl. No. 444.—*F. Dominicensis,* Gmel. Syst. 1, p. 285.—*Little Hawk,* Catesby, 1, p. 5.—*L'Emerillon de la Caroline,* Briss. Orn. 1, p. 386.—*Tinnunculus Sparverius,* Vieil Ois. de l'Am. Sept. p. 12, 13.—J. Doughty's Collection.

"In no department of ornithology has there been greater confusion, or more mistakes made, than among this class of birds of prey. The great difference of size between the male and female, the progressive variation of plumage to which, for several years, they are subject, and the difficulty of procuring a sufficient number of specimens for examination; all these causes conspire to lead the naturalist into almost unavoidable mistakes. According to fashionable etiquette the honour of precedence, in the present instance, is given to the *female* of this species; both because she is the most courageous, the largest, and the handsomest of the two, best ascertained, and less subject to change of colour than the male.

"This bird is a constant resident in almost every part of the United States, particularly in the States north of Maryland. In the southern States there is a smaller species found, which is destitute of the black spots on the head; the legs are long and very slender, and the wings light blue. This has been supposed, by some, to be the male of the present species; but this is an error. The eye of the present species is dusky; that of the smaller species a brilliant orange; the former has the tail *rounded* at the end, the latter slightly *forked.* Such essential differences never take place between two individuals of the same species. It ought, however, to be remarked, that in all the figures and descriptions I have hitherto met with of the bird now before us, the iris is represented of a bright golden colour; but in all the specimens I have shot I uniformly found the eye very dark, almost black, resembling a globe of black glass. No doubt the golden colour of the iris would give the figure of the bird a more striking appearance; but in works of natural history to sacrifice truth to mere picturesque effect, is detestable; though, I fear, but too often put in practice.

"The nest of this species is usually built in a hollow tree; generally pretty high up, where the top or a large limb has been broken off. I have never seen its eggs; but have been told that the female generally lays four or five, which are of a light brownish yellow colour, spotted with a darker tint; the young are fed on grasshoppers, mice, and small birds, the usual food of the parents.

"The habits and manners of this bird are well known. It flies rather irregularly, occasionally suspending itself in the air, hovering over a particular spot for a minute or two, and then shooting off in another direction. It perches on the top of a dead tree, or pole in the middle of a field or meadow, and as it alights shuts its long wings so suddenly that they seem instantly to disappear; it sits here in an almost perpendicular position, sometimes for an hour at a time, frequently jerking its tail, and reconnoitering the ground below, in every direction, for mice, lizards, &c. It approaches the farm-house, particularly in the morning, skulking about the barn-yard for mice or young chickens. It frequently plunges into a thicket after small birds, as if by random; but always with a particular, and generally a fatal, aim. One day I observed a bird of this species perched on the highest top of a large poplar, on the skirts of the wood; and was in the act of raising the gun to my eye when he swept down with the rapidity of an arrow into a thicket of briars about thirty yards off, where I shot him dead; and on coming up found a small field sparrow quivering in his grasp. Both our aims had been taken in the same instant, and, unfortunately for him, both were fatal. It is particularly fond of watching along hedge-rows, and in orchards, where those small birds, usually resort. When grasshoppers are plenty, they form a considerable part of its food.

"Though small snakes, mice, lizards, &c. be favourite morsels with this active bird; yet we are not to suppose it altogether destitute of delicacy in feeding. It will seldom

or never eat of any thing that it has not itself killed, and even that, if not (as epicures would term it) *in good eating order*, is sometimes rejected. A very respectable friend, through the medium of Mr. Bartram, informs me, that one morning he observed one of these Hawks dart down on the ground, and seize a mouse, which he carried to a fence post; where, after examining it for some time, he left it; and a little while after, pounced upon another mouse, which he instantly carried off to his nest, in the hollow of a tree hard by. The gentleman, anxious to know why the Hawk had rejected the first mouse, went up to it, and found it to be almost covered with lice, and greatly emaciated! Here was not only delicacy of taste, but sound and prudent reasoning.—"If I carry this to my nest," thought he, "it will fill it with vermin, and hardly be worth eating."

"The Blue Jays have a particular antipathy to this bird, and frequently insult it by following and imitating its notes so exactly as to deceive even those well acquainted with both. In return for all this abuse the Hawk contents himself with, now and then, feasting on the plumpest of his persecutors; who are therefore in perpetual dread of him; and yet, through some strange infatuation, or from fear that if they lose sight of him he may attack them unawares, the Sparrow Hawk no sooner appears than the alarm is given, and the whole posse of Jays follow.

"The female of this species, which is here faithfully represented from a very beautiful specimen, is eleven inches long, and twenty-three from tip to tip of the expanded wings. The cere and legs are yellow; bill blue, tipped with black; space round the eye greenish blue; iris deep dusky; head bluish ash; crown rufous; seven spots of black, on a white ground, surround the head in the manner represented in the figure; whole upper parts reddish bay, transversely streaked with black; primary and secondary quills black, spotted on their inner vanes with brownish white; whole lower parts yellowish white, marked with longitudinal streaks of brown, except the chin, vent, and femoral feathers, which are white; claws black.

"The character of the male corresponds with that of the female. I have reason, however, to believe, that these birds vary considerably in the colour and markings of their plumage during the first and second years, having met with specimens every way corresponding with the above, except in the breast, which was a plain rufous white, without spots; the markings on the tail also differing a little in different specimens. These I uniformly found on dissection to be males; from the stomach of one of which I took a considerable part of the carcass of a Robin *(Turdus migratorius)* including the unbroken feet and claws; though the Robin actually measures within half an inch as long as the Sparrow Hawk."

AN ATTEMPT AT DOMESTICATING

THE PARTRIDGE, OR QUAIL.

PERDIX VIRGINIANUS.

My Dear Sir,

You have had the kindness to send me the numbers of the "Cabinet of Natural History," as far as they have been published; and, I assure you, their contents have amused and instructed me. The Editors appear to have studied, where every lover of Nature delights to study, in the fields and the forests; and I feel so desirous of their success in exciting, among the community, a greater fondness for the study of Natural History, than has heretofore been exhibited, that I have ventured to look over a hasty and imperfect diary, in which I have occasionally noted down any circumstance in relation to that fascinating science, that appeared new to me, with the intention of sending one or two communications to you; and if you, or the Editors, should deem them sufficiently interesting for the "Cabinet," they are at your service. You have, however, reminded me of an experiment, which has, for a year past, been progressing almost under your eye; and as I cannot, at this moment, recollect any thing upon the subject of Natural History, which interests me more than this, I proceed to communicate it, giving your name as a voucher for the accuracy of my statements.

Having been informed, that the Partridge of the southern States (one of the most interesting game birds of the country) had been sometimes reared by the common hen, and had remained half-domesticated until by accident it was lost, or through neglect suffered to stray away, I made several attempts to domesticate it. Upon two occasions I procured eggs, and had them hatched without difficulty, under a common hen; but when they were about half grown, I removed from the city, and continued absent during the summer; upon my return in autumn, I found that my servants, classing them with the unproductive and troublesome appendages of the establishment, had neglected them, and they had disappeared.

The last year, (1830,) however, I resolved to try the experiment again; and I am about to acquaint you with the result. I found greater difficulty in procuring the eggs than I had anticipated; but on the 25th of May, a friend sent me sixteen from the country, and upon the same day they were placed under a Bantam hen, which, upon the evening of the twenty-sixth day's sitting, hatched fifteen of them; but to my great surprise, she commenced swallowing those which were not yet dry, and before I had arranged a suitable place for herself and the little brood, she had devoured all but

seven. This vicious propensity I can only account for by the circumstance, that the servants were in the habit of carelessly throwing dead chickens into the yard, which had given the poultry a taste for meat. Be this as it may, I was mortified in seeing one half of the brood thus greedily swallowed by their unnatural stepmother. The seven that remained were removed from the hen till the next morning, when they were put into a box, five feet by two, and the hen once more placed near them. She from that moment seemed to regard them as her own, and evinced extreme affection for them. The box was railed across the top, and divided into two apartments by rails within; so that, if any delicacies were given to the young, the hen could not reach them. They were fed on alum-curds and corn-grist, and I soon discovered that they would eat any food, such as is usually thrown out to young chickens. At first they were wild; but, by being kept in a place where the servants were constantly passing and repassing, they became tolerably tame, and, after three weeks, were suffered to run about the flower-garden, which contains a quantity of shrubbery, and is ninety feet long by seventy broad, with a fence tight near the ground.

To guard against their flying away, I took off the first joint from a wing of each, which operation did not seem to give them much pain, nor did it in any measure retard their growth. In the autumn they moulted their feathers, and continued free from disease, and have always been very healthy.

An unlucky cat, from the neighbourhood, conceived a fancy for my birds, and carried off one; and I was necessitated to set box-traps, in which several of these enemies of the feathered race were caught, and, by the consent of their owners, were sent upon their travels.

When the Partridges had obtained their full growth they became very interesting, following me about the garden and the house, and running up to me at the moment I called them: this familiarity cost the life of another, for, in following me into an upper piazza, it attempted to fly into the garden, and was killed by the fall. Two only of the remaining five were females, and I was obliged to commence my experiment on rather a smaller scale.

Sometime in March, my ears were greeted with the sound of "Bob White," at first low, but it increased in fulness of tone. The other males soon followed, and, in a few days, the whistle that charmed me so much in boyhood, and delights me still, was heard from morning till night. These birds were reared far removed from others, having listened to no softer notes than those emitted by ducks and geese; nevertheless, they uttered the song of their species: a proof that it is natural, and requires no art to teach it to them. They soon began to pair off, and look out for nests, and some bloody battles were fought by the males. For the preservation of peace, I removed one of them into an aviary, where a couple of wild females of his kind were kept, but to which he has never become fairly reconciled, and he still seems to sigh for his old haunts. I placed two boxes in a sheltered situation within my garden, with a small quantity of hay in and about them, in hopes that the birds might find them suited to their purposes. I discovered that one of the boxes had attracted them, and, in a few days, a very compact little nest had been built. Upon the 28th of May, the first egg was laid in the nest, and, after this, an egg was added almost every day. About eight days ago, the second hen began to lay in the same nest, verifying what I had long suspected, that more than one female occasionally lay in the same nest, as I have once seen twenty-eight eggs, and at another time thirty-one, in a nest in the fields; and I once received from a friend a few eggs, that were found in the nest of a guinea-fowl. They have now (June 23d) laid eighteen eggs, a part of which I have placed under a Bantam hen, and a few remain upon which I intend one of the birds to set. The other I think will begin laying again, after her eggs have been taken from her; as in this climate they raise two broods, and when, by some accident, their eggs are destroyed, they lay several times during a summer. I have examined by the light of a lamp, (according to my usual custom) whether the eggs which were placed under a hen are impregnated, and find that they are likely to produce young; and, therefore, I conclude that my experiment will eventuate successfully: I commenced it with the eggs, and brought the birds through all the stages until they have produced eggs.

Whether birds of this species will ever be raised to any extent is doubtful, as it will only be attempted by those who are curious in such matters; but my experiment shows that it can be done without much trouble. I find them, also, very amusing pets, they come regularly to be fed, and seem, when neglected, to have a method of making me understand that they are hungry. The males are very resolute, and like the quails used in the cockpits of the ancients, are fearless pugnacious fellows, and attack the pigeons and poultry, and are sure to follow and pick at every foot that approaches their nest.

I have some farther anecdotes of these interesting birds, but am admonished, that, whilst I am amusing myself with the relation of experiments which have been very interesting to me, they may be less so to others.

Yours, with great esteem,

L. J. Salaignac, esq.

A Lover of Natural History.

Charleston, S. C. June 23, 1831.

AN INTERESTING MODE OF FINDING WILD BEES.

Among the vast multitudes of insects that cover the earth, there are none which attract the attention, or excite the admiration of mankind, so much as the Honey Bees. These familiar and interesting insects are the constant attendants on man, and, in the newly settled parts of our country, are among the first visitors to welcome the migrating husbandman to the uncultivated forest.

I have always been a lover of nature; inanimate and animate. In the former, I have often in the mountain wilds, found a solace from the perplexities of life, while contemplating the undisturbed serenity of the wilderness around me; and the latter has afforded me a thousand recreative and physical enjoyments, when nature required invigoration, or the monotony of a country, and in a measure solitary, life. Variety, and the subjects of the present notice, were not among the least to afford amusement and innocent pastime, as well as considerable profit.

On my native, fertile, and flower-bearing hills have I spent many days during the season of youth, in studying the habits, and searching for the hives, of the Wild Honey Bees. These abound, in great quantities, in most of our northern and western forests; but it requires system and skill to discover them.

I know of no amusement surpassing the pursuit of Wild Bees: it affords recreation without fatigue; relief and diversion to the mind, and the quantity of honey frequently procured during these excursions is almost incredible. The scenery which you must necessarily enter is of the most romantic kind, and being elevated frequently on some mountain summit, you enjoy a free, uncontaminated circulation of air, which invigorates the body, and gives buoyancy to the mind.

Having never seen the manner of finding Wild Bees described, I thought (as it may be considered among the pastimes of our country) an account of it might be interesting to the readers of your work.

In this pursuit I always provided myself with a tin box, about five inches in diameter, and of sufficient depth to contain a honeycomb, without mashing it when the lid was put on, a glass tumbler, and a forked stick, about five feet long; this stick should contain three prongs, in order to set the tin box in it secure, and the opposite end should be sharpened for the purpose of sticking in the ground. I then filled the comb with honey, and went either to a buckwheat field, or to some wild flowers, until I found a Bee, and so soon as this was the case, I made it prisoner, by placing the tumbler over the Bee and flower, and then, by closing the mouth of the tumbler with the palm of my hand, the Bee would leave the flower and fly upwards against the bottom of the tumbler, and try to escape. There is never danger of being stung unless you hurt the Bee, in which case it will most assuredly revenge itself. Being thus provided, I sought an open spot in the wood to commence my operations; this was done by fixing the forked stick firmly in the ground, and placing the tin box containing the honey in the fork; I next put the tumbler with the Bee immediately on

the honey, and then darkened the whole concern by placing my hat over it. So soon as by this means the light would come to the Bee from below, it would descend to the honey, and commence filling itself. This was an important thing to observe, and which could be easily done by gently raising the hat a short distance. When I supposed the Bee was *partly* filled, I took suddenly away both hat and tumbler, and this transit from darkness to light would make it fly immediately. The manner of flight from the dish of honey is always spirally, rising higher and higher, until by its repeated circles, the proper height in the air is attained, when it directs a perfectly straight course to the hive to which it belongs.

The ground which I selected was generally so unobstructed by the branches of trees, that I could discern the flight of the Bee for one or two hundred yards. The time chosen was on a perfectly still and clear day, as, on a dark or windy day, the flight of the Bees would not only be very indirect, but the distance of seeing them so short as to prevent success in finding their hives.

The flight of a Bee is never varied when passing to its hive, unless to avoid some obstacle. Indeed, so very direct is its course, that among those in my neighbourhood who are acquainted with this circumstance, it is a proverb, when an analogous thing is to be exemplified, to say that "it goes as straight as a Bee." However, when a tree intervenes, instead of passing through its branches, instinct points out to the Bee, the danger it is often subject to of being caught by the various fly-catching birds which may be sitting on the limbs of the tree, which it will always avoid by a considerable circular flight, or by passing beneath or above the tops of the trees.

The distance of the hive from me I could calculate to a very great certainty, by the time which elapsed between the departure from, and return of, the Bee to the dish, allowing, as experience had taught me, from three to four minutes per mile; one and a half minute for it to carry its burden to the hive, one or two minutes to deposit its honey, (according to the depth of the hole in the tree into which it had to crawl,) and one minute to return unencumbered. In this manner I have succeeded in finding hives at a distance of several miles from my starting place.

On the return of the Bee to the dish, its flight was marked by the same spiral movements, until it would again settle in the honey. This Bee, in every instance, was accompanied by other Bees, which, having discovered the spoils it brought to the hive, would follow it, to partake of the same treasure; and, the shorter the distance to the hive, the greater would be the number of visitants to the dish. This was another sure guide for me to judge of the distance. When a number settled on the honey, I caught and confined them in the tumbler, by tying it with them in my handkerchief. Having marked the course of the first Bee, I then carried my various articles in that direction, (which I was always able to ascertain to a considerable distance by means of a pocket compass,) perhaps for half a mile, or more or less, as I judged the distance to the tree I was in search of, and, making the same preparations as at first, I placed the tumbler of Bees again on the honey, and suffered them, under cover of my hat, to begin to fill themselves, when I would let them off, by taking away the hat and tumbler as before. This plan I repeated as often as was necessary to bring me to the foot of the tree which contained the swarm of Bees. As I approached the spot, the Bees would congregate in greater numbers about the dish: the party flying from the plate always returning with recruits.

I never suffered my prisoner Bees to fill themselves to surfeit, as, in this case, my efforts would have been useless, for these Bees would never have returned again.

The description of trees on which I usually found these hives were the white pine and hemlock, and the entrance for the swarm mostly was a small hole, situated, generally, high in the trunk,* in which case it was difficult to discover it; but when situated nearer the earth, the ingress and egress of the Bees would be plainly seen, on the first approach to the tree. It frequently happened, that, owing to the very great height of the hives, I had to resort to a variation in my mode of finding them, and this would be by marking the suspected tree with an axe, and then, with my honey, tumbler, and prisoner Bees, I would take a side position of several hundred yards from the tree which I had marked with my axe, and from this position, start some Bees, in order to get a cross line, or form a right angle by their flight, and, having watched the course of the Bees, I marked this line until it crossed the first line, at which spot I invariably found the swarm, and, not unfrequently, in the identical tree that I had marked.

It sometimes happened that I would pass the tree containing the swarm, in which case the Bees let off would not return to my dish; and I had then to resort to the expedient of making a fire and heating some stones, on which I placed some honeycomb, until a considerable smoke was produced; the fumes ascending would attract the notice of the Bees, and would bring them in numbers to the spot. I then placed

* As there are more animals beside man which are fond of *sweet things*, the Bees seem to be aware of the number and voracity of their enemies, hence the reason of their choosing large trees and small holes as entrances for their hives, in order to keep out intruders from their honey. Foxes and Bears are among their most formidable enemies, and while the former, with all their cunning, fail frequently in obtaining this mellifluous plunder, the latter, by boldness, ability to climb, and the impervious nature of their skin to the weapons of the Bees, seldom fail to secure honey from hives, of which they are immoderately fond.

the dish within their reach, and not only obtained the precise course to this hive, but have frequently made prisoners of Bees, drawn from other, and more distant hives. The members of the two communities could be easily distinguished, as, the moment one approached the other, a battle between them would immediately ensue.

When a hive was favourably situated, on a moderate size tree, I would prefer climbing to the spot, and thrust in a lighted match of brimstone, and disable the Bees, until I thought I could take the honey with safety. I would then cut a hole beside the hive and take the honey away, and having provided a small line and a bucket, would lower it down by degrees, until all was accomplished. In this way, I have not unfrequently obtained from one hundred and fifty to two hundred pounds of honey from a single hive.

When the trees were large, and the hive at a great distance from the ground, the only plan to obtain the honey was to cut down the tree; and, although this is the easiest plan, yet it ought not to be adopted, unless the other fails, as, should the tree be very hollow, it will break in its fall, and most of the honey would be lost. It is also attended with danger, because the anxiety to secure the honey before it runs away, will cause many persons to run immediately to the hive, and they are often punished most severely by the Bees, which swarm on the outside at first to ascertain the cause of their disturbance, but soon return again into the hole, when they can be destroyed by means of sulphur, and their honey taken.

T. M. H.

CHARACTERISTICS OF A TRUE SPORTSMAN.

A TRUE Sportsman always respects the rules and seasons for shooting, and most heartily despises the man who destroys the unfledged brood, or the protectors which Nature has provided for them.

He is provided with every article necessary for his excursions, without borrowing from his neighbour, or eternally boring his friends for their guns, dogs, or horses.

In his general exterior, he appears neat, clean, and properly accoutred. His dogs are mannerly, because, by discipline, they are restrained to proper limits, and, when he visits a distant friend, these dogs avoid running into parlours, chambers, or stealing viands from the kitchen fire. They hunt properly, and require no noise, because he has instructed them in the fundamental principles of hunting.

He neither curses at, nor abuses his dogs, but, when necessary, chastises them in cool blood, because *good breeding* has taught him the fallacy of swearing at a dumb brute; or venting his passion on another, when the fault too commonly springs from other sources.

To his dogs he is merciful and provident; he consults their comfort, and, if he will draw recreation from their services, he repays them by humanity.

In the field, his demeanour is correct, and free from impetuosity; deliberation marks all his actions, and his experience is never chargeable with carelessness, or danger, to his companions; to the more inexperienced who accompany him; he is kind, and willing to confer knowledge; to contribute to their pleasure by giving many opportunities to shoot, without *greedily* embracing them himself, for the sake of bagging game. When the dogs point, he does not rush up to the game before his companions are near, and take the first, and, perhaps, the only chance of shooting. If a bird is killed in a joint shot, with a companion, he is cautious not to claim it, but will yield it with pleasure, rather than excite unpleasant feelings, or engender strife.

He is satisfied with a moderate quantity of game, and is not ambitious to destroy life, for the sake of making a parade of his success; and, when asked, he gives a faithful account of the number killed, and is unwilling to reap the name of a *good shot*, or *great Sportsman*, at the expense of truth, by exaggerating his difficulties, or the account of game killed, to double of what is the reality.

Although lively and communicative in company with other Sportsmen, he does not boast of his actions, nor his ability to excel his neighbour; neither does he brag of his exploits, nor undervalue his friend's adeptness, for the purpose of enhancing his own good name. He hears the abilities of others praised without envy, or ridiculing their exploits, or offering a bet, (accompanied by an oath,) that himself is superior. The consciousness of his own qualifications does not make him vain and boastful; he is liberal to those he employs, and a stranger to meanness of principle and action; he avoids injury to the farmer's crops, and never adds insult where injury has been unavoidably caused by him or his dogs.

He will not waste time or life, by shooting useless birds, merely to gratify vanity, by showing how well he can shoot.

If he drinks spirituous liquors during his excursions, he does it moderately, so that he may, by its inebriating effects, neither endanger his friends, nor disgrace their company.

Should he borrow from his friend a dog or gun, he will not send the one home in a starving condition, nor the other broken, dirty, and unfit for use.

If he makes an appointment, he is strict to accomplish it, and does not waste his time in bed hours after the period to meet his companion has elapsed.

Unless a man is more or less governed by the above, he cannot lay claim to those principles which constitute a correct Sportsman.

D.

ON THE VICIOUS HABITS AND PROPENSITIES OF HORSES.

By Thomas R. Yare,

(Continued from page 216.)

CRIB BITING.

I have occasionally excited the ire of grooms, by requesting them to abandon the practice of using the rack-chain. These gentlemen, when interrogated as to the utility of attaching the head to the rack, usually answer, "To prevent the horse lying down, and dirtying his quarters!" But the true reason is, they are fearful of a little extra trouble, in case the animal should be wanted at a short notice. When I have inquired if the horse was habituated to lying down in the day-time, or whether he has been ever known so to do, the response given is usually, "No; we never actually saw him down during the day, but we have always been accustomed to tie him up." Therefore, according to their own showing, they give the poor beast this unnecessary restraint from no other cause but custom, which they blindly and implicitly follow, though they can adduce no benefit resulting from its observance. Custom and prejudice are most imperious tyrants, and rule triumphant over horsemen, as well as other classes of society. There are certain points established, certain axioms laid down, and the nine people out of ten, who never think for themselves, take every thing upon credit, and implicitly fall into the regulated course of opinion generally held, without stopping to inquire whether it happens to be just or unjust, tolerably right, or entirely wrong.

If the horse be addicted to lying down in the day-time, I have generally found, on inspection, that he is either sick or lame, and consequently required immediate attention. Now, to tie horses to the rack under such circumstances, is obviously an act of cruelty. In my opinion, to attach any horse to the rack, only serves to pave the way for the occurence of those habits and vices which have for so many years baffled the attempts of horsemen to prevent, correct, and eradicate with certainty and permanency.

Many continue pertinaciously to assert that crib-biting is not injurious to the strength of horses. I am free to admit that they sometimes go through very arduous tasks and fleet performances, and may probably occasionally win a race; but capability of exertion would be still more evident, and the rapidity of his course increased, if the malady were removed. But no positive reliance can be placed in the exertions of a crib-biter or wind-sucker; for the natural power and ability of the animal must inevitably be weakened, and ultimately yield altogether to the ravages the indulgence of these propensities occasion on the frame of the animal, if prosecuted for any length of time.

A horse may be addicted to cribbing, and yet its pernicious effects shall not be perceptible, except to those who are thoroughly acquainted with the smyptoms incidental to, and which uniformly accompany, the practice of the habit. I have known many horses labouring under this malady, whose condition appeared so good to the casual observer, that their owners have doubted my allegations as to their weakness; but a little extra exertion, in company with a sound horse of apparently equal power and capability, soon convinced the party of their error—the strength of the crib-biter, after a short trial, proving very inferior to that of his opponent. I know well that horses indulging in the propensity must of necessity be injured or impaired in their stamina. Acting upon this calculation, when attending races, and accidentally discovering that any particular horse was either a crib-biter or wind-sucker, although he might be a "favorite," to use a turf phrase, "I uniformly back him to lose, and am generally right."

I have no hesitation in saying that a crib-biter is *bona fide* an unsound horse; and, notwithstanding the warring litigations that may have occurred occasionally in consequence of the habit, when a totally opposite notion to mine has been entertained on the question, yet I cannot avoid arraying my individual opinion in opposition to the fearful host of dissentients who may start up against me, when my assertion is perused. *I verily believe that a crib-biter, sold with a warranty of soundness, is, to all intents and purposes, returnable:* and I think I cannot be accounted unfair or erroneous in this position, founded on the well-ascertained fact, that "crib-biting horses are injured in their stamina."

That Nestor among veterinarians, Mr. Bracy Clark—to whom the horse is so greatly indebted, not only for his valuable publications, but likewise for the discovery of many parts and properties of the foot of the horse, and above all his perfection of the expansion shoe—observes very truly in his remarks on this subject, that "the crib-biting horse has generally a lean, constricted appearance, the skin being contracted about the ribs; or a sunken, watery eye, or else too dry; the muscles of the face also, as well as the skin, drawn up with rigidness. When unemployed in eating, his almost constant amusement is to grasp the rail of the manger with his front teeth, then to draw himself up to it, as to a fixed point, by a general contraction of the head, neck, and trunk; at the same time the effort is attended with a grunting sound."

Now, many veterinary surgeons are of opinion that the particular noise made by the horse is caused by the expulsion of air, and that crib-biting is in fact nothing more than an effort at eructation, arising from indigestion or some viscid state of the stomach; whilst others pretend to say, that the habit is caused from pain in the feet. If either of

these opinions were correct, to remove this destructive propensity, recourse must necessarily be had to the *Materia Medica*, and the animal should be treated according to the rules of veterinary science. That these judgments must be erroneous, I prove clearly by the system I have established, which enables me to eradicate crib-biting and wind-sucking without the aid of medicine.

My attention, as I have before stated, has been directed to the prevention and cure of this destructive malady during a long period; and although I may dissent from many very respectable authorities, I must remark, that, during the whole course of my experience, I have uniformly observed that a crib-biter (as well as wind-sucker) inhales air into the stomach, which, from its construction, he cannot exhale or degurgitate; for horses, unlike dogs and many other animals, can neither belch nor vomit, consequently in its progress through the stomach and bowels, the oxygen, or elastic property of the air, is taken up by the system, which causes a redundancy of fixed air in the abdominal parts—hence arises flatulency, which of course produces indigestion, general debility, and an impaired stamina; and these alarming effects, if not attended to and removed, must naturally lead to disorders of dangerous tendencies.

To broach an opinion of this import is, I know, in opposition to the sentiments entertained by many hippologists; and that I may be clearly understood by every reader, I have purposely avoided the use of scientific words or technical phraseology, and expressed my meaning in plain unassuming language.

Others, however, of acknowledged skill and ability in their profession have lately had the liberality to confess, that, on mature consideration of the subject, they considered I was correct, and encouraged me to proceed in my course.

With much labour, patience, and perseverance, I aimed at the discovery of the *proximate cause of crib-biting*. My studies have been practical, for I could meet with no satisfactory information in books. I made experiments of various kinds, repeated and improved them, and thus approached nearer to my object, till at length I had the pleasure of perceiving that I was in the right track.

That the crib-biter inhales more air into the stomach than he can exhale, I am convinced; and on that conviction have founded my system for the treatment of the malady; the application of which I may assert without presumption, cannot fail of success, if attended to with sincerity and good will on the part of grooms and other stable domectics.

A crib-biter of any standing becomes soured in temper; his natural strength soon gives way; weakness more or less ensues; and he is rendered unfit for a proper day's work: yet horses labouring under the effects of this propensity are expected by their proprietors to perform the most violent exertions, and the fleetest and most rapid efforts are required of them! Hunting, racing, in short every duty is imposed indiscriminately with sound animals, till the poor beast sinks prematurely under his accumulated misery, and is thus rendered unserviceable many years before his natural term. Under kind and judicious treatment, the horse would be much longer lived than is generally supposed, as existing facts testify.

Various remedies, purporting to be infallible, for vicious horses have of late years been put forth to the world, but nothing has in reality been gained by them. I allude to torturing straps, bands, and other vexatious applications, which only tend to sour the disposition of the animal, and on their removal leave him more inveterately addicted to his evil habits. Others, from want of a better remedy, have recourse to loathsome and nauseous experiments, which are as futile as they are disgusting, and cannot possibly be expected to produce any permanently good effects; for as the matter or ordure employed dries and hardens, it naturally loses its effluvia, and consequently requires repetition to make the process adopted effectual, even if it were proper to pursue it. An accumulation of filth on the manger is the result; and we all know that that utensil should be kept particularly clean. I have no patience when I reflect on such proceedings. It is obvious to any one conversant with horses, that a filthy stable is the forerunner of disease. The only consequence emanating from conduct so inconsiderately ignorant is, that the silly attendant, for his own convenience, is soon compelled to remove the dirt, gaining nothing but additional labour for his assumed sagacity.

He who pretends to correct the horse, by inventing apparatus with that view, should previously study the nature and character of the animal, in addition to the contemplation of his own emolument. To exemplify this observation, let us consider for a moment the fate of the straps with the spring and spikes. They were introduced under the protection of weighty patronage; and all that influence could do was adopted to facilitate their reception in the highest quarters, and render their adoption general. They were predominant for a time, and were probably esteemed by persons unacquainted with the matter, who received the *ipse dixit* of others as truth "sacred as Holy Writ;" and accordingly the straps were considered and recommended by many persons as a certain cure for crib-biters. However, when essayed by those whose knowledge and intelligence could be relied on, it was discovered that they could never fulfil the object promised to purchasers, and not the most distant prospect of efficacy could be entertained. Their application only served to alarm, irritate, and tease the horse, without producing any beneficial effects; and on their removal, he was generally found as inveterately addicted to his propen-

sity as ever. A horse will never become tractable under fear, which is soon excited, as his timidity is proverbial. What is rational can only be attained by rational ways; and in nature an object cannot be compassed but by means consistent with nature. The straps were invented without any adherence to this maxim; hence their inutility and consequent downfall.

Covering the top of the manger with a sheep-skin, the woolly side outwards, is a remedy still in vogue amongst persons who act and move upon second-hand information. This insignificant process continues a favorite, and is very sagely recommended as a preventive in many of the provinces. I have more than once seen it used as a precaution, and in London too, above all places!

The execrable and infamous custom of burning the palate of the mouth as an antidote to crib-biting, cannot be too strongly reprobated, and must not be passed over in silence: but, without stopping to descant on the cruelty of this practice, I have merely to observe that the proselytes to it have gained very little by their barbarity; as the horse is only checked so long as the soreness and tenderness caused by the cauterising exist, and no sooner has the pain subsided than he recommences operations. Should a gentleman discover the wound, the inflictors, ashamed of their proceedings, take special care not to divulge the real cause, but quibble and prevaricate, till at length I have known them hit upon the expedient of informing an inquirer that the poor thing had been *seared for the lampas*, evincing by the subterfuge as much ignorance as they possess want of feeling!

Although a digression, I cannot help remarking that burning for the lampas is a stigma to our national character, and a disgrace to the veterinary practice. If we would only have a little patience, Nature would in due course perform her functions. The arrogant attempts of man to render her precocious only aggravate the evil, by the unnecessary infliction of torture on the horse. Let us allow time: Nature will help herself without our aid, not only in this instance, but in many others where cruelty is the order of the day. But to proceed—

The barbarous and inhuman use of pulleys, chains, and straps as correctives, is a mode of treatment attended with numberless injuries to men and horses. The latter have not unfrequently been rendered unmanageable by them, as is proved by the numerous accidents which have occurred solely by their application. Several preventives which I could name are a shame to humanity: tying the tongue, the ear, and the tail with whipcord, and many other torturing rough-riding tricks well known to a certain class of horsemen, are equally cruel, and not less prejudicial to the character of the horse, as well as dangerous to the personal safety of the owner when using him. Experience teaches, that the natural timidity of this noble animal is increased by repeated harsh usage; so that he loses all confidence in man, makes resistance on every occasion when approached, and at length becomes useless, or totally unserviceable.

As I quote from memory, it cannot be expected that I should enumerate all the cruel operations included in the nomenclature of remedies for vicious horses, which deserve the more appropriate designation of *torments*. The inflictions to which that generous animal is subjected, under the mistaken notion of eradicating crib-biting or other bad habits, and rendering him more subservient to man, are shocking to relate. The foremost in the rank of wickedness, and which I shall select as a concluding elucidation of the subject of torture, are the lacerations committed on the tongue of the poor ill-treated beast: sometimes by slitting it; on other occasions cutting a portion of the tip completely off; at other times dividing the nerve; and in some instances passing a red-hot tobacco pipe, or wire of an equivalent thickness, underneath the tongue, thereby excoriating and blistering the most sensitive and tender part of the organ. *Pro tempore! pro mores!* these are refinements in cruelty which "out Herod Herod," and may probably startle some of my readers; but, unfortunately, they are but too true.

But I am weary of the subject, and consider I have advanced sufficient reasons to convince every person possessing a spark of humanity, and at all interested in the welfare of domestic animals, that it is high time something should be done to relieve the sufferings, and rectify the injuries the horse has received at our hands. If my feeble efforts to obtain redress for him be the means of procuring in his behalf advocates of more intelligence and influence than I can boast, I shall deem myself amply compensated, and anticipate with confidence a speedy alteration for the better in the present erroneous system of stable management.

THE CAPTIVE EAGLE.

A BALLAD.

By Charles West Thomson.

An Eagle sat on the stormy peak
Of a mountain's rugged crag,
Where the winds of the winter whistled bleak
And uttered their boisterous brag.

His head was as bald as the cliff where he sat,
And his neck was as white as its snow,
And his eye was like that of the mountain cat,
When he glares on his prey below.

On the scathed limb of an ancient oak,
He had taken his lofty stand,
And thence he looked down where wreaths of smoke
Gave tokens of cultured land.

And away and away did his gaze extend
O'er the ocean's waters blue,
And he heard the roar on the distant shore
Where the snow-white sea gulls flew.

He had perched his nest on that mountain's brow,
In the eye of the glorious sun,
And he looked on the face of the day-king now,
As for many long years he had done.

He had seen his eaglets thence go forth
To the chase of the hawk on the sea,
He had sailed on the icy-winged blast of the North,
And screamed as he rode it with glee.

Long years had he dwelt on that mountain height,
And sailed o'er that ocean's gloom,
When the morning was bright, or the blackness of night
Made darker the tempest's plume.

Long years had he stood by that roaring flood,
And that rock was his kingdom's throne,
By the storm-rent oak his decree he spoke,
And his will was his law alone.

Even now he sat on that oak so bare,
Majestic and proud and free,
The emblem at once, and the glorious heir
Of nature's liberty.

He sat with his noble wings outspread
For a flight o'er the sunny land,
And he launched thro' the air like an arrow that's sped
From a practised archer's hand.

Away deep down to the scene below
He flew on fearless wing,
And he paused where a waterfall turned into snow
The stream of a woodland spring.

Ah! bird of royalty! sad for thee
To have left thy mountain height,
Where thy way was unwatched, and thy wing was free,
And none to arrest thy flight.

For the hunter has marked thy downward course,
And fixed on thee his eye—
And has lifted his gun to the noon-day sun,
And said that thou shalt die.

A flash—a roar—the Eagle rose
From the tree where his perch had been,—
And the echo that woke from the forest of oak,
Shouted loud as to chide the sin.

He soared away on his upward flight,
As he uttered a piercing cry,
But suddenly dropped, like the meteor of night
That falls in a summer sky.

With a broken wing he could no more seek
To rise in the glare of day—
So the monarch that reigned on the mountain's peak,
Was carried a captive away.

* * * * * *

In a sumptuous cage was the Eagle placed,
And his food was served with care,
And the hunter sought to provide his taste
With all that was rich and rare.

His meat in a dainty dish was brought,
And his drink in a basin trim,
But that which he most desired and sought,
O that was not brought to him.

Where were the woods with their scathed trees,
Where was the torrent's roar,
Where was the sigh of the Northern breeze,
The surf on the wind-beat shore?

Where were the ocean's crested waves,
Where were the flower-crowned hills,
Where were the mossy rocks and caves
Where were the chiming rills?

Where, where were the high majestic peaks,
Where the sun in his glory shined?
O he had all these in his memories,
It was these for which he pined.

With a spirit broke, like his wounded wing,
As a flower that is nipt by the frost,
He was wearing away and withering,
For the life of his life was lost.

While the noble bird was in thraldom's tether
To soothe him was all in vain—
The mountain monarch was altogether
Unfitted for slavery's chain.

He could not endure his splendid prison
When summer was in the sky,
He could not endure when the sun had uprisen,
To watch him with captive eye.

A free breath from the mountains came o'er him again—
When rising in native pride,
He buried his talons deep, deep in his brain,
And, a martyr to liberty, died.

AMERICAN PORCUPINE.

CANADA PORCUPINE.

HYSTRIX PILOSUS.

Hystrix Pilosus Americanus, Catesby. Carol. app. p. 30. Richardson, *Faun. Am. bor.* 214. *Porcupine from Hudson's bay*, Edwards. *Cavia Hudsonius*, Klein, *Quad.* p. 51. *Hystrix Hudsonius*, Brisson, *Regn. an.* p. 148. *Hystrix dorsata.* Lin. *syst.* p. 57. *Canada Porcupine*, Forster, *Phil. Tran.* lxii. p. 374. Pennant, *Quad.* ii. p. 126. Godman, ii. 160. *Bear Porcupine*, Harlan. 190. *Porcupine of North America*, Cozzens, *Ann. Lyceum, Nat. Hist.* i. 190. *Eretizon dorsatum*, F. Cuvier, *Mem. de Mus.* ix. p. 431.—Philadelphia Museum.

The Porcupines belong to the genus Hystrix, Lin., which is characterised by having the clavicles imperfect, two incisor teeth in each jaw, and four molars both above and below on each side, these have flat crowns, surrounded by a line of enamel, which enters into both edges, appears to divide the tooth into two portions; there are also small lines of enamel radiating from the centre which are worn down by attrition; the muzzle is thick and truncated; the lip divided; the tongue furnished with spiny scales; the ears short and round; the anterior feet have four toes, whilst the posterior have five, all armed with thick nails. Cuvier, however, divides this genus into Hystrix, Athetura, Eretison, and Synethera. The sub-genus Eretison, which is founded on the subject of our present sketch, is distinguished by the head being flat, the muzzle short and not arched, the tail of a moderate length, the spines short and almost hidden in the hair.

The common Porcupine, (*H. cristata*) although known from the earliest ages, has given rise to numberless fables; among which, that commonly received, is, that it possesses the power of ejecting its quills to a considerable distance when irritated or pursued; but although it has not this mode of defending itself, it is by no means a contemptible antagonist, as when attacked it will throw itself with great fierceness towards its opponent, and almost always sideways, and as it is on the sides that the spines are strongest it often inflicts wounds by means of them; its bite is also very severe, from the strength and size of its incisor teeth. The use of this armature has been the subject of inquiry among naturalists, and does not appear to be well understood; the most probable idea, however, is, that, like that of the Hedgehog, it is merely for defence, as, like that animal, it has the power of rolling itself into a ball, and thus presenting a phalanx of spears on every side, that renders the attacks of most animals perfectly fruitless; in fact, it has few enemies to dread except that universal destroyer—man. Thunberg, however, attributes a most extraordinary use to these spines: he says, he was informed that the Ceylonese Porcupine "has a very curious method of fetching water for its young, viz: the quills in the tail are said to be hollow, and to have a hole at the extremity; and that the animal can bend them in such a manner, as that they can be filled with water, which afterwards is discharged in the nest among the young." This account, which is as erroneous as that of their having the power of shooting their quills, shows how apt even naturalists are to adopt the current fables of a country on mere hearsay, and without investigation into their verity, or even probability.

The Canada Porcupine is a very unsightly and sluggish animal, and is not provided with the long quills so remarkable in the last mentioned species, its armature consisting of short sharp spines almost concealed by the hair with which they are intermingled. Buffon terms it *urson*, intending, as is observed by Dr. Richardson, to recall the memory of Hudson, the discoverer of the country where it abounds, and also to denote its spiny appearance, resembling that of the Hedgehog, (*herisson*). As will be seen by the list of synonymes, it has received a variety of appellations from different naturalists, and as Catesby's name of *pilosus* was bestowed upon it prior to that of *dorsata*, we have adopted it, though the other is generally retained by authors. The following description of it, by Dr. Richardson, is so full, that we extract it, instead of attempting to draw out another.

"*Form.*—Body thick and clumsy, back much arched in a regular curve from the nose to the buttocks, when it drops more rapidly to the tail, which is very low. *Legs* very short. *Tail*, short, thick, rounded at the tip, and turned a little upwards. *Nose* flattish above, broad and abrupt. There is a narrow, naked margin round the nostrils, but there is no smooth dividing line on the upper lip. *Eyes*, lateral, very small, and round. *Ears* situated behind and above the auditory opening, covered as thickly with fur as the neighbouring parts, and entirely concealed by it. *Incisors* nearly as strong as those of the beaver. They curve forward a little so as to project beyond the nose, are convex anteriorly narrower behind, and are not much compressed. They have a yellow colour. The crowns of the grinders, as they wear, acquire an even surface."

"*Fur.*—The upper lip covered with short hair of a dull yellowish brown colour. The cheeks and forehead are clothed with liver brown hair, moderately long, interspersed with a very few black and white hairs. The hair on the body, both above and below, is long, and of a dull liver-brown colour, intermixed on all the upper parts, and on the hips with still larger hairs, some of which are entirely black, others entirely white, and a third set black at the roots and

white at tip. The white hairs are most numerous on the posterior part of the body. There are also many round, spindle shaped, sharp pointed spines or quills, fixed among the hair which covers the upper parts. The spines commence on the crown of the head, and are there short, thick, very sharp pointed and very numerous. There are a good many longer and more slender ones on the shoulders and fore part of the back. There are also many on the sides and middle of the back, but these are still more slender and flexible, as well as less conspicuous. The buttocks and thighs are thickly set with long, very strong, and sharp spines. Some of these are entirely white, others brown at tip. The *throat* and *belly* are covered with brown hair, not so long as that on the back, lying more smoothly, and unmixed with either white hairs or spines. The *tail* is covered with brown hair above and below, and soiled white hair on its margin and tip. There are many small spines among the hair on its upper surface.

"The *legs* are covered with brown hairs, mixed on their exterior surfaces with some white ones. The *palms* are nearly oval or rather egg shaped, being semi-circular before, and narrower behind. There are four very short toes on the fore feet, which are armed with long, compressed, curved, blackish claws, grooved underneath their whole length. Their points are not acute. The middle or second fore toe is rather the longest, the one on each side of it is scarcely inferior in length, and the outer one is a little smaller and somewhat further back. The *hind soles* are oval, approaching to circular, larger than the palms, destitute of hair and covered with a rough skin like shagreen. There are five toes on the hind foot, which do not differ much from each other in length, but their roots, and consequently their extremities, are arranged in a curved line, corresponding with that of the anterior margin of the soles. The hind claws resemble the fore ones. The hair which covers the upper surface of the feet, curved down by the sides of the soles, and being worn even, as if clipped off, it forms a thick marginal brush which considerably increases the diameter of the soles, and fits them for walking on the snow."

The Canada Porcupine, however, varies much in colour; though the above is the most common, sometimes they have been found quite white, and at others of an almost universal dark brown. The spines or quills are attached but slightly to the skin, and from being barbed at tip with numerous small reversed points or prickles, they penetrate by degrees very deep into the flesh after having been once lodged. On the animal's being irritated, he has the power of directing their points in every direction, and small and insignificant as these weapons may appear, they are capable of causing the death of dogs, wolves, or indeed of any animal that incautiously attempts to seize the Porcupine. These quills are in great request among the aborigines, who use them in great quantities in the manufacture of a number of ornaments, previously dying them, in a very permanent manner, of variety of colours. As the quills are but from two to three inches in length, it requires no slight degree of ingenuity and skill to form the large surfaces of embroidery with them, so common on Indian belts and other articles of dress. This work is performed in several ways; by passing a delicate fibre of sinew through a hole previously made with an awl, and at every stitch wrapping it with one or more turns of the quill; when this is wound near to its end, the extremity is turned into the skin, or is concealed by the next strip, so that the whole work appears as if formed of a continuous piece; in other cases the quills are used without the aid of the sinew, being merely passed through the awl holes. Examples of these, and in fact, of every mode in which they are employed by our native Indians, may be seen in the unrivalled collection of aboriginal dresses belonging to the Philadelphia Museum.

The Canada Porcupine is principally found in the northern parts of the United States and Canada as high as 67°; it also occurs in some parts of Pennsylvania, but is very rare further south. Mr. Cozzens states, that of late years they have multiplied greatly, and are become numerous near Oneida Lake, and in the north western part of the State of New York. In the fur countries, they are most numerous in sandy districts covered with the *Pinus Banksiana* of the bark of which they are very fond.* They also eat the bark of the larch and spruce fir, and the buds of various species of willow. Further south, their food is principally composed of the bark and leaves of the hemlock and basswood, though they are also fond of sweet apples, Indian corn, &c., which they eat in a sitting posture, using their fore paws like the squirrels.

They are very slow in their movements, and remain in the same spot for a long time. Hearne says, "that the Indians, going with packets from fort to fort, often see them in the trees, but not having occasion for them at that time, leave them till they return; and should their absence be for a week or ten days, they are sure to find them within a mile of the place where they had seen them before." When moving, the tail hangs down very low, and in the winter makes a deep furrow or track in the snow which cannot be mistaken for that of any other animal. They are generally discovered, however, by the devastation they commit on the trees, which, if done in the winter, is a sure sign that the animal is near. They will, in most cases, be found on the branches, and when approached, utter a weak cry like

* Richardson, Faun. am. bor.

that of a child. Dr. Best, of Lexington, Ky., in a letter to Dr. Godman, says, that in the State of Ohio they "take up their residence in hollow trees, whence it appeared to me, in several instances, from their tracks in the snow, they only travel to the nearest ash tree, whose branches serve them for food. In every instance which came under my observation, there was no single track, but a plain beaten path, from the tree in which they lodged, to the ash, from which they obtained their food. I cut down two trees for Porcupine, and found but one in each; one of the trees also contained four raccoons, but in a separate hollow, they occupied the trunk, the Porcupine the limbs."

They are readily killed by striking them on the nose, and their flesh is much esteemed by the natives, though it soon disgusts whites; its taste is said to resemble flabby pork. The bones are often tinged of a greenish yellow colour; this arises in all probability from some of the vegetable substances on which it feeds. Like all animals of similar habits, the Porcupine is much infested with intestinal worms.

They pair about the latter end of September, and the female brings forth two young in April and May.

THE COUGAR.

There is an extensive Swamp in the section of the State of Mississippi which lies partly in the Choctaw territory. It commences at the borders of the Mississippi, at no great distance from a Chicasaw village, situated near the mouth of a creek known by the name of Vanconnah, and partly inundated by the swellings of several large bayous, the principal of which, crossing the swamp in its whole extent, discharges its waters not far from the mouth of the Yazoo River. This famous bayou is called False River. The swamp of which I am speaking follows the windings of the Yazoo, until the latter branches off to the north-east, and at this point forms the stream named Cold Water River, below which the Yazoo receives the draining of another bayou inclining towards the north-west, and intersecting that known by the name of False River, at a short distance from the place where the latter receives the waters of the Mississippi. This tedious account of the situation of the swamp, is given with the view of pointing it out to all students of nature who may chance to go that way, and whom I would earnestly urge to visit its interior, as it abounds in rare and interesting productions: birds, quadrupeds, and reptiles, as well as molluscous animals, many of which, I am persuaded, have never been described.

In the course of one of my rambles, I chanced to meet with a squatter's cabin on the banks of the Cold Water River. In the owner of this hut, like most of those adventurous settlers in the uncultivated tracts of our frontier districts, I found a person well versed in the chase, and acquainted with the habits of some of the larger species of quadrupeds and birds. As he who is desirous of instruction ought not to disdain listening to any one who has knowledge to communicate, however humble may be his lot, or however limited his talents, I entered the squatter's cabin, and immediately opened a conversation with him respecting the situation of the swamp, and its natural productions. He told me he thought it the very place I ought to visit, spoke of the game which it contained, and pointed to some bear and deer skins, adding that the individuals to which they had belonged formed but a small portion of the number of those animals which he had shot within it. My heart swelled with delight, and on asking if he would accompany me through the great morass, and allow me to become an inmate of his humble but hospitable mansion, I was gratified to find that he cordially assented to all my proposals. So I immediately unstrapped my drawing materials, laid up my gun, and sat down to partake of the homely but wholesome fare intended for the supper of the squatter, his wife, and his two sons.

The quietness of the evening seemed in perfect accordance with the gentle demeanour of the family. The wife and children, I more than once thought, seemed to look upon me as a strange sort of person, going about, as I told them I was, in search of birds and plants; and were I here to relate the many questions which they put to me in return for those which I addressed to them, the catalogue would occupy several pages. The husband, a native of Connecticut, had heard of the existence of such men as myself, both in our own country and abroad, and seemed greatly pleased to have me under his roof. Supper over, I asked my kind host what had induced him to remove to this wild and solitary spot. "The people are growing too numerous now to thrive in New England," was his answer. I thought of the state of some parts of Europe, and calculating the denseness of their population compared with that of New England, exclaimed to myself, "How much more difficult must it be for men to thrive in those populous countries!" The conversation then changed, and the squatter, his sons and myself, spoke of hunting and fishing, until at length tired, we laid ourselves down on pallets of bear skins, and reposed in peace on the floor of the only apartment of which the hut consisted.

Day dawned, and the squatter's call to his hogs, which, being almost in a wild state, were suffered to seek the greater portion of their food in the woods, awakened me. Being ready dressed, I was not long in joining him. The

hogs and their young came grunting at the well known call of their owner, who threw them a few ears of corn, and counted them, but told me that for some weeks their number had been greatly diminished by the ravages committed upon them by a large *Panther*, by which name the Cougar is designated in America, and that the ravenous animal did not content himself with the flesh of his pigs, but now and then carried off one of his calves, notwithstanding the many attempts he had made to shoot it. The *Painter*, as he sometimes called it, had on several occasions robbed him of a dead deer; and to these exploits the squatter added several remarkable feats of audacity which it had performed, to give me an idea of the formidable character of the beast. Delighted by his description, I offered to assist him in destroying the enemy, at which he was highly pleased, but assured me that unless some of his neighbours should join us with their dogs and his own, the attempt would prove fruitless. Soon after, mounting a horse, he went off to his neighbours, several of whom lived at a distance of some miles, and appointed a day of meeting.

The hunters, accordingly, made their appearance, one fine morning, at the door of the cabin, just as the sun was emerging from beneath the horizon. They were five in number, and fully equipped for the chase, being mounted on horses, which in some parts of Europe might appear sorry nags, but which in strength, speed and bottom, are better fitted for pursuing a cougar or a bear through woods and morasses than any in that country. A pack of large ugly curs were already engaged in making acquaintance with those of the squatter. He and myself mounted his two best horses, whilst his sons were bestriding others of inferior quality.

Few words were uttered by the party until we had reached the edge of the Swamp, where it was agreed that all should disperse and seek for the fresh track of the Painter, it being previously settled that the discoverer should blow his horn, and remain on the spot until the rest should join him. In less than an hour, the sound of the horn was clearly heard, and, sticking close to the squatter, off we went through the thick woods, guided only by the now and then repeated call of the distant huntsman. We soon reached the spot, and in a short time the rest of the party came up. The best dog was sent forward to track the Cougar, and in a few moments the whole pack were observed diligently trailing, and bearing in their course for the interior of the Swamp. The rifles were immediately put in trim, and the party followed the dogs, at separate distances, but in sight of each other, determined to shoot at no other game than the Panther.

The dogs soon began to mouth, and suddenly quickened their pace. My companion concluded that the beast was on the ground, and putting our horses to a gentle gallop, we followed the curs, guided by their voices. The noise of the dogs increased, when all of a sudden their mode of barking became altered, and the squatter, urging me to push on, told me that the beast was *treed*, by which he meant that it had got upon some low branch of a tree to rest for a few moments, and that should we not succeed in shooting him when thus situated, we might expect a long chase of it. As we approached the spot, we all by degrees united into a body, but on seeing the dogs at the foot of a large tree, separated again and galloped off to surround it.

Each hunter now moved with caution, holding his gun ready, and allowing the bridle to dangle on the neck of his horse, as it advanced slowly towards the dogs. A shot from one of the party was heard, on which the Cougar was seen to leap to the ground, and bound off with such velocity as to show that he was very unwilling to stand our fire longer. The dogs set off in pursuit with great eagerness and a deafening cry. The hunter who had fired came up and said that his ball had hit the monster, and had probably broken one of his fore-legs near the shoulder, the only place at which he could aim. A slight trail of blood was discovered on the ground, but the curs proceeded at such a rate that we merely noticed this, and put spurs to our horses, which galloped on towards the centre of the swamp. One bayou was crossed, then another still larger and more muddy; but the dogs were brushing forward, and as the horses began to pant at a furious rate, we judged it expedient to leave them and advance on foot. These determined hunters knew that the Cougar being wounded, would shortly ascend another tree, where in all probability he would remain for a considerable time, and that it would be easy to follow the track of the dogs. We dismounted, took off the saddles and bridles, set the bells attached to the horses' necks at liberty to jingle, hoppled the animals, and left them to shift for themselves.

Now, reader, follow the group marching through the swamp, crossing muddy pools, and making the best of their way over fallen trees and amongst the tangled rushes that now and then covered acres of ground. If you are a hunter yourself, all this will appear nothing to you; but if crowded assemblies of "beauty and fashion," or the quiet enjoyment of your "pleasure-grounds," alone delight you, I must mend my pen before I attempt to give you an idea of the pleasure felt on such an expedition.

After marching for a couple of hours, we again heard the dogs. Each of us pressed forward, elated at the thought of terminating the career of the Cougar. Some of the dogs were heard whining, although the greater number barked vehemently. We felt assured that the Cougar was treed, and that he would rest for some time to recover from his

fatigue. As we came up to the dogs, we discovered the ferocious animal lying across a large branch, close to the trunk of a cotton-wood tree. His broad breast lay towards us; his eyes were at one time bent on us and again on the dogs beneath and around him; one of his fore legs hung loosely by his side, and he lay crouched, with his ears lowered close to his head, as if he thought he might remain undiscovered. Three balls were fired at him, at a given signal, on which he sprang a few feet from the branch, and tumbled headlong to the ground. Attacked on all sides by the enraged curs, the infuriated Cougar fought with desperate valour; but the squatter advancing in front of the party, and almost in the midst of the dogs, shot him immediately behind and beneath the left shoulder. The Cougar writhed for a moment in agony, and in another lay dead.

The sun was now sinking in the west. Two of the hunters separated from the rest, to procure venison, whilst the squatter's sons were ordered to make the best of their way home, to be ready to feed the hogs in the morning. The rest of the party agreed to camp on the spot. The Cougar was despoiled of its skin, and its carcass left to the hungry dogs. Whilst engaged in preparing our camp, we heard the report of a gun, and soon after one of our hunters returned with a small deer. A fire was lighted, and each hunter displayed his *pone* of bread, along with a flask of whiskey. The deer was skinned in a trice, and slices placed on sticks before the fire. These materials afforded us an excellent meal, and as the night grew darker, stories and songs went round, until my companions, fatigued, laid themselves down, close under the smoke of the fire, and soon fell asleep.

I walked for some minutes round the camp, to contemplate the beauties of that nature, from which I have certainly derived my greatest pleasures. I thought of the occurrences of the day, and glancing my eye around, remarked the singular effects produced by the phosphorescent qualities of the large decayed trunks which lay in all directions around me. How easy, I thought, would it be for the confused and agitated mind of a person bewildered in a swamp like this, to imagine in each of these luminous masses some wondrous and fearful being, the very sight of which might make the hair stand erect on his head. The thought of being myself placed in such a predicament burst over my mind, and I hastened to join my companions, beside whom I laid me down and slept, assured that no enemy could approach us without first rousing the dogs, which were growling in fierce dispute over the remains of the Cougar.

At daybreak we left our camp, the squatter bearing on his shoulder the skin of the late destroyer of his stock, and retraced our steps until we found our horses, which had not strayed far from the place where we had left them. These we soon saddled, and jogging along, in a direct course, guided by the sun, congratulating each other on the destruction of so formidable a neighbour as the panther had been, we soon arrived at my host's cabin. The five neighbours partook of such refreshment as the house could afford, and dispersing, returned to their homes, leaving me to follow my favourite pursuits.—*Audubon's American Ornithological Biography.*

THE ELEPHANT.

The human race excepted, the Elephant is the most respectable of animals. In size he surpasses all other terrestrial creatures, and in understanding he is inferior only to man. Of all the brute creation, the Elephant, the dog, the ape, and the beaver, are most admirable for their sagacity; but the genius of the dog is only borrowed, being instructed by man in almost every thing he knows; the monkey has only the appearance of wisdom, and the beaver is only sensible with regard to himself, and those of his species. The Elephant is superior to them all three; he unites all their most eminent qualities. The hand is the principal organ of the monkey's dexterity; the Elephant with his trunk, which serves him instead of arms and hands, with which he can lift up, and seize the smallest, as well as the largest objects, carry them to his mouth, place them on his back, hold them, or throw them afar off, has the same dexterity as the monkey, and at the same time the tractableness of the dog; he is like him susceptible of gratitude, capable of a strong attachment; he uses himself to man without reluctance, and submits to him, not so much by force, as by good treatment; he serves him with zeal, intelligence, and fidelity; in fine, the Elephant, like the beaver, loves the society of his equals, and makes them understand him. They are often seen to assemble together, disperse, act in concert, and if they do not erect buildings, and do not work in common, it is perhaps, for want of room only, and tranquillity; for men have very anciently multiplied in all the regions inhabited by the Elephant; he consequently lives in fear and anxiety, and is no where a peaceful possessor of a space large and secure enough to establish his habitation on a settled spot. Every being in nature has his real price, and relative value; to judge of both in the Elephant, we must allow him at least the judgment of the beaver, the dexterity of the monkey, the sentiment of the dog, and to add to these qualifications, the peculiar advantages of strength, size, and longevity. We must not forget his arms, or his defence, with which he can pierce through,

and conquer the lion. We must observe, that he shakes the ground at every step; that with his trunk he roots up trees; that with the strength of his body he makes a breach in a wall; that, being terrible by his force, he is invincible by the resistance only of his enormous mass, and by the thickness of the leather which covers it; that he can carry on his back a tower armed in war, with a number of men; that he alone moves machines, and carries burthens, which six horses cannot move. To this prodigious strength he joins courage, prudence, coolness, and an exact obedience: he preserves moderation even in his most violent passion; he is more constant than impetuous in love; in anger he does not forget his friends; he never attacks any but those who have given him offence; he remembers favours as long as injuries: having no taste for flesh, and feeding chiefly upon vegetables, he is not naturally an enemy to other animals; he is beloved by them all, since all of them respect him, and have no cause to fear him. For these reasons, men have had at all times a veneration for this great, this first of animals. The ancients considered the Elephant as a prodigy, a miracle of nature; they have much exaggerated his natural faculties; they attribute to him, without hesitation, not only intellectual qualities, but moral virtues.

In a wild state, the Elephant is neither bloody nor ferocious; his manners are social; he seldom wanders alone; he commonly walks in company, the oldest leads the herd, the next in age drives them, and forms the rear; the young and the weak are in the middle. The females carry their young, and hold them close with their trunks. They only observe this order, however, in perilous marches, when they go to feed on cultivated lands; they walk or travel with less precaution in forests and solitary places, but still keeping at such a moderate distance from each other, as to be able to give mutual assistance, and seasonable warnings of danger. Some, however, straggle, and remain behind the others; none but these are attacked by hunters, for a small army would be requisite to assail the whole herd, and they could not conquer without a great loss of men; it is even dangerous to do them the least injury, they go straight to the offender, and, notwithstanding the weight of their body, they walk so fast that they easily overtake the lightest man in running; they pierce him through with their tusks, or seize him with their trunks, throw them against a stone, and tread him under their feet; but it is only when they have been provoked, that they become so furious and so implacable. It is said, that when they have been once attacked by men, or have fallen into a snare, they never forget it, and seek for revenge on all occasions. As they have an exquisite sense of smelling, perhaps more perfect than any other animal, owing to the large extent of their nose, they smell a man at a great distance, and could easily follow him by the track. These animals are fond of the banks of rivers, deep valleys, shady places, and marshy grounds; they cannot subsist a long while without water, and they make it thick and muddy before they drink; they often fill their trunks with it, either to convey it to their mouth, or only to cool their nose, and to amuse themselves in sprinkling it around them; they cannot support cold, and suffer equally from excessive heat, for, to avoid the burning rays of the sun, they penetrate into the thickest forests; they also bathe often in the water; the enormous size of their body is rather an advantage to them in swimming, and they do not swim so deep in the water as other animals; besides, the length of their trunk, which they erect, and through which they breathe, takes from them all fear of being drowned.

Their common food is roots, herbs, leaves, and young branches; they also eat fruit and corn, but they have a dislike to flesh and fish. When one of them finds abundant pasture, he calls the others, and invites them to come and feed with him. As they want a great quantity of fodder, they often change their place, and when they find cultivated lands, they make a prodigious waste; their bodies being of an enormous weight, they destroy ten times more with their feet, than they consume for their food, which may be reckoned at the rate of one hundred and fifty pounds of grass daily. As they never feed but in great numbers, they waste a large territory in about an hour's time; for this reason, the Indians and the Negroes take great pains to prevent their visits, and to drive them away, by making a great noise, and great fires; notwithstanding these precautions, however, the Elephants often take possession of them, drive away the cattle and men, and sometimes pull down their cottages. It is difficult to frighten them, as they are little susceptible of fear; nothing can stop them but fire-works, and crackers thrown amongst them, the sudden effect of which, often repeated, forces them sometimes to turn back. It is very difficult to part them, for they commonly attack their enemies all together, proceed unconcerned, or turn back.

The female Elephant goes two years with young; when she is in that condition the male never conjoins with her. They only bring forth a young one, which has teeth as soon as brought forth; he is then larger than a boar; yet his tusks are not visible, they appear soon after, and at six months old are some inches in length; at that age, the Elephant is larger than an ox, and the tusks continue to increase till he is advanced in years.

It is very easy to tame the Elephant. As he is the strongest and most rational of animals, he is more serviceable than any of them; but he was formerly supposed to feel his servile condition, and never to couple in a domestic state. This, however, has been found to be an erroneous opinion.

There is, therefore, no domestic Elephant but has been wild before; and the manner of taking, taming, and bringing them into submission, deserves particular attention. In the middle of forests, and in the vicinity of the places which they frequent, a large space is chosen, and encircled with palisadoes; the strongest trees of the forest serve instead of stakes, to which cross pieces of timber are fastened, which support the other stakes; a man may easily pass through this palisado; there is another great opening, through which the Elephant may go in, with a trap hanging over it, or a gate which is shut behind him: to bring him to that enclosure, he must be enticed by a tame female, ready to take the male; and when her leader thinks she is near enough to be heard, he obliges her to indicate by her cries the condition she is in; the wild male answers immediately, and begins his march to join her, she repeats her call now and then, and arrives first to the first enclosure, where the male, following her track, enters through the same gate. As soon as he perceives himelf shut up, his ardour vanishes, and when he discovers the hunters, he becomes furious; they throw at him ropes with a running knot to stop him; they fetter his legs and his trunk, they bring two or three tame Elephants, led by dexterous men, and try to tie them with the wild Elephant, and at last, by dint of dexterity, strength, terror, and caresses, they succeed in taming him in a few days.

The Elephant, once tamed, becomes the most tractable and the most submissive of all animals; he conceives an affection for his leader, he caresses him, and seems to guess whatever can please him: in a little time he understands the signs, and even the expression of sounds; he distinguishes the tone of command, that of anger or good nature, and acts accordingly: he never mistakes the words of his master; he receives his orders with attention, executes them with prudence and eagerness, without precipitation; for his motions are always measured, and his character seems to participate of the gravity of his body; he is easily taught to bend the knee to assist those who will ride on his back; he caresses his friends with his trunk, and salutes with it the persons he is directed to take notice of: he makes use of it to lift burdens, and helps to load himself; he has no aversion to being clothed, and seems to delight in a golden harness or magnificent trappings; he is easily put to the traces of carts, and draws ships upon occasion: he draws evenly, without stopping, or any marks of dislike, provided he is not insulted by unseasonable correction, and provided his driver seems to be thankful for the spontaneous exertion of his strength. His leader is mounted on his neck, and makes use of an iron rod crooked at the end, with which he strikes him gently on the head to make him turn or increase his pace; but often a word is sufficient, especially if he has had time to make himself well acquainted with his leader, and has a confidence in him; his attachment is sometimes so strong and so lasting, and his affection so great, that commonly he refuses to serve under any other person, and he is known to have died of grief for having in anger killed his governor.

The species of the Elephant is numerous, though they bring forth but one young once in two or three years; the shorter the life of animals is, the more they multiply: in the Elephant, the length of his life compensates the small number; and if it is true, as has been affirmed, that he lives two hundred years, and that he begets when he is one hundred and twenty years old, each couple brings forth forty young in that space of time: besides, having nothing to fear from other animals, and little even from men, who take them with great difficulty, the species has not decreased, and is generally dispersed in all the southern parts of Africa and Asia.

From time immemorial the Indians made use of Elephants in war. Amongst those nations unacquainted with the European military discipline, they were the best troops of their armies; and as long as battles were decided by mere weapons, they commonly vanquished: yet we see in history, that the Greeks and Romans used themselves soon to those monsters of war; they opened their ranks to let them go through; they did not attempt to wound them, but threw all their darts against their leaders, who were forced to surrender, and to calm the Elephants when separated from their troops; and now that fire is become the element of war, and the principal instrument of death, the Elephants, who are afraid of the noise and the fire of the artillery, would be rather an incumbrance in battle, and more dangerous than useful.

In those regions, however, where our cannons and murdering arts are yet scarcely known, they fight still with Elephants. At Cochin, and in the other parts of Malabar, they do not make use of horses, and all those who do not fight on foot are mounted upon Elephants. In Tonquin, Siam, and Pegu, the king, and all the grandees, never ride but upon Elephants: on festival days they are preceded and followed by a great number of these animals richly caparisoned, and covered with the richest stuffs. On comparing the relations of travellers and historians, it appears that the Elephants are more numerous in Africa than in Asia; they are there also less mistrustful, not so wild, and, as if they knew the unskilfulness and the little power of the men with whom they have to deal in this part of the world, come every day without fear to their habitations.

Buffon's Natural History.

THE MULE.

The longevity of the Mule has become so proverbial, that a purchaser seldom inquires his age. Pliny gives an account of one, taken from Grecian history, that was eighty years old; and though past labour, followed others that were carrying materials to build the temple of Minerva at Athens, and seemed to wish to assist them; which so pleased the people, that they ordered he should have free egress to the grain market. Dr. Rees mentions two that were seventy years old in England. I saw, myself, in the West Indies, a mule perform his task in a cane mill, that his owner assured me was forty years old. I now own a mare mule twenty-five years old, that I have had in constant work twenty-one years, and can discover no diminution in her powers; she has within a year past often taken upwards of a ton weight in a wagon to Boston, a distance of more than five miles. A gentleman in my neighborhood has owned a very large mule about fourteen years, that cannot be less than twenty-eight years old. He informed me a few days since, that he could not perceive the least failure in him, and would not exchange him for any farm horse in the county. And I am just informed, from a source entitled to perfect confidence, that a highly respectable gentleman and eminent agriculturalist, near Centreville, on the Eastern Shore of Maryland, owns a mule, that is thirty-five years old, as capable of labour as at any former period.

The great Roman naturalist, in one of the most beautiful passages of his elaborate history of nature, observes that "the earth is constantly teased more to furnish the luxuries of man than his necessities."* We can have no doubt but that the remark applied with great justice to the habits of the Romans in the time of Pliny; and I am much mistaken if ample proofs cannot be adduced, that it will lose none of its force or truth, at this present period, in all northern climates, or any section of the United States where the horse is employed for agriculture as well as for pleasure. Far be it from me, however, to disparage this noble animal; on the contrary I feel a strong attachment for him; and at the same time a full conviction, that the substitution of the mule, for the purposes before stated, as extensively as may be consistent with the requisite production of each species, will have the effect of restoring the horse to the station from which he has been degraded, and place him as in former ages, upon a more dignified footing, an object of acknowledged luxury; and thereby introduce a more correct system of breeding and management, in which our countrymen are so generally deficient, consequently more perfect animals and such an advance in the price of them, that will afford the farmer what he is now a stranger to—such remuneration as will make his brood mares a profitable species of stock. And it is obvious that the system will be followed by an improvement in the breed of mules, in the same ratio as the miserable race of scrub mares, which are now consuming the profits of agriculture, shall become extinct.

It does not appear that the horse was employed by the ancients for any purpose of husbandry. The ox and ass drew the plough and the wain, and performed all kinds of drudgery until after the *feudal system* was established in Europe, when the numerous retainers of the feudal lords, who held their lands by the *tenure* of performing knight's service, found themselves under the necessity of making the horses they were obliged to keep, contribute towards their support in the cultivation. From this time I believe, we may date, and from this cause may be attributed, the introduction of the horse for the purposes of agriculture. Since that period, the history of Europe is little else than the annals of war and its preparations; and no material for that scourge, except the deluded human victims, seems more necessary than the horse—accordingly we find that throughout the whole country, from the Rhine or the Seine, to beyond the Danube and Vistula, which has been the principal arena, the system of agriculture has embraced, extensively, the breeding of horses of different grades and forms adapted to the several uses in war. Indeed, whole provinces were appropriated almost exclusively to the rearing those animals for disposal to the different combatants; and it must be obvious, that their general use in husbandry, at the same time, would follow as a necessary consequence. It cannot be expected therefore, but that the Dutch and Germans who have emigrated to our country, should bring with them such strong predilections for the horse, which have continued with most of their descendants, especially in those sections where communities of that respectable and industrious portion of our population have been located. In Great Britain, to the causes which have produced the effects described on the continent, may be added the insular position of the United Kingdoms, vulnerable from numberless and distant points, the horse has been considered, in connection with the unconquerable spirit of the nation, as one of the most efficient means of repelling invasion: a cir-

* It is the earth that, like a kind mother receives us at our birth, and sustains us when born. It is this alone, of all the elements around us, that is never found an enemy to man. The body of waters deluge him with rains, oppress him with hail, and drown him with inundations: the air rushes on in storms, prepares the tempest, or lights up the volcano; but the earth, gentle and indulgent, ever subservient to the wants of man, spreads his walks with flowers, and his table with plenty; returns with interest every good committed to her care, and though she produces the poison, she still supplies the antidote, though constantly teased more to furnish the luxuries of man, than his necessities, yet even to the last, she continues her kind indulgence, and when life is over, she piously hides his remains in her bosom.

Pliny's Natural History, Book II. Chap. 63.

cumstance that would of itself be sufficient to account for the overweaning attachment to this animal. But identified as his services have been, for a long period, with the convenience, sports, and recreations, of all ranks and classes, and the science of breeding, and training forming a characteristic feature, it could not excite surprise, if the approach of that terrible spectre, famine, should produce little or no effect in the reduction of the number. And although some of the most distinguished characters in the nation, eminent for their practical knowledge in rural economy, have been for half a century advocating the substitution of the ox for the purposes of agriculture, and demonstrating the feasibility, economy, and vast saving of food, yet it is said the number of labouring oxen have lately diminished and horses increased. Five millions of the latter are now supposed to subsist in the United Kingdom, and two-thirds employed in husbandry—consuming, at a moderate estimate, the product of twenty millions of highly cultivated acres! And what is the consequence? consumption follows so close upon supply, that at every season of harvest, let the preceding one be never so abundant, fast sailing vessels are found in the various ports, with their anchors *atrip*, to convey intelligence of the result, to all parts of the world, where a surplus of bread corn is grown—exciting such an interest in our own country, that the farmer on the shores of Erie and Ontario, and on the banks of the Ohio, may be seen reading bulletins of British weather—the rain and sunshine of every day in August and the two following months—often within thirty days after the time of their publication in London or Liverpool. Can it be supposed, that in a country where an attachment to the horse borders so nearly upon infatuation, that the question of the utility of the Mule as a substitute, would be seriously agitated, or engage scarce a momentary investigation?

In no country is the Mule better adapted to all the purposes of husbandry, for which the horse is used, than in every section of our own. And it would be highly desirable to be able to exhibit a calculation of the actual saving, in dollars and cents, by his employment—but unfortunately no correct data can be had. And as I consider such calculations, unless founded upon experimental facts, and those multiplied, to be as "tinkling cymbals," I shall merely submit a desultory comparison between the Mule and the Horse, derived from such facts as my own experience, and information from authentic sources, will justify the assumption of.

From what has been stated respecting the longevity of the Mule, I think it may be fairly assumed, that he does not deteriorate more rapidly after twenty years of age, than the horse after ten, allowing the same extent of work and similar treatment to each. The contrast in the Mule's freedom from malady or disease, compared with the horse, is not less striking. Arthur Young, during his tour in Ireland, was informed that a gentleman had lost several fine Mules by feeding them on wheat straw *cut;* and I have been informed that a Mule dealer, in the western part of New York, attributed the loss of a number of young Mules, in a severe winter, when his hay was exhausted, to feeding them exclusively on *cut* straw and Indian corn meal. In no other instance have I ever heard or known of a Mule being attacked with any disorder or complaint, except two or three cases of inflammation of the intestines, caused by gross neglect in permitting them to remain exposed to cold and wet, when in a high state of perspiration after severe labour, and drinking to excess of cold water. From his light frame and more cautious movements, the mule is less subject to casualties than the horse. Indeed, it is not improbable, but a farmer may work the same team of Mules above twenty years and never be presented with a farrier's bill, or find it necessary to exercise the art himself.

Sir John Sinclair, in his "Reports on the Agriculture of Scotland," remarks that "if the whole period of a horse's labour be fifteen years, the first six may be equal in value to that of the remaining nine: therefore, a horse of ten years old, after working six years, may be worth half his original value." He estimates the annual decline of a horse to be equal to fifty per cent. on his price every six years, and supposes one out of twenty-five that are regularly employed in agriculture, to die every year: constituting a charge of four per cent. per annum for insurance against diseases and accidents. He considers five acres of land, of medium quality, necessary for the maintenance of each horse, and the annual expense, including harness, shoeing, farriery, insurance and decline in value, allowing him to cost two hundred dollars, to exceed that sum about five per cent., which is the only difference between the estimate of this illustrious and accurate agriculturalist, and that of a respectable committee of the Farmers' Society of Barnwell district, South Carolina, who, in a report published in the Charleston Courier, of 23d of February last, state, that "the annual expense of keeping a horse is equal to his value!" The same committee also state, that "at four years old a horse will seldom sell for more than the expense of rearing him." That "the superiority of the Mule over the horse, had long been appreciated by some of their most judicious planters—that two Mules could be raised at less expense than one horse—that a Mule is fit for service at an earlier period, if of sufficient size—will perform as much labour, and if attended to when first put to work, his gait and habits may be formed to suit the taste of the owner." This report may be considered a most valuable document, emanating as it does, from enlightened *practical* farmers and planters, in a section of

country where we may suppose a horse can be maintained cheaper than in Maryland, or any State farther North.

I am convinced that the small breed of Mules will consume less in proportion to the labour they are capable of performing, than the large race, but I shall confine the comparison to the latter—those that stand from fourteen and a half, to rising of fifteen hands, and equal to any labour that a horse is usually put to. From repeated experiments in the course of two winters, I found, that three Mules of this description, that were constantly at work, consumed about the same quantity of hay, and only one-fourth the provender that was given to two middling sized coach horses moderately worked. And from many years attentive observation, I am led to believe that a large sized Mule will not require more than three-fifths to two-thirds the food, to keep him in good order, that will be necessary for a horse performing the same extent of labour. Although a Mule will work and endure on such mean and hard fare, that a horse would soon give out upon, he has an equal relish for that which is good; and it is strict economy to indulge him, for no animal will pay better for extra keep, by extra work. But if, by hard fare, or hard work, he is reduced to a skeleton, two or three weeks rest and good keeping will put him in flesh and high condition for labour. I have witnessed several such examples with subjects twenty years old; so much cannot be said of a horse at that age. The expense of shoeing a Mule the year round, does not amount to more than one-third that of a horse, his hoofs being harder, more horny, and so slow in their growth, the shoes require no removal, and hold on till worn out—and the wear, from the lightness of the animal, is much less.

In answer to the charge generally prevalent against the Mule, that he is "vicious, stubborn, and slow," I can assert, that out of about twenty that have been employed on my estate, at different periods during a course of thirty years, and those picked up chiefly on account of their size and spirit, wherever they could be found, one only had any vicious propensities, and those might have been subdued by proper management when young. I have always found them truer pullers, and quicker travellers with a load, than horses. Their vision and hearing is much more accurate. I have used them in my family carriage, in a gig, and under the saddle: and have never known one to start or run from any object or noise: a fault in the horse that continually causes the maiming and death of numbers of human beings. The Mule is more steady in his draught, and less likely to waste his strength than the horse: hence more suitable to work with oxen; and as he walks faster, will habituate them to a quicker gait. But for none of the purposes of agriculture does his superiority appear more conspicuous than ploughing among crops, his feet being smaller and follow each other so much more in a line, that he seldom treads down the ridges or crops. The facility of instructing him to obey implicitly the voice of his driver or the ploughman, is astonishing. The best ploughed tillage land I ever saw, I have had performed by two Mules, *tandem*, without lines or driver.

There is one plausible objection often urged against the Mule, that "on deep soils and deep roads, his feet being so much smaller than those of the horse, sink farther in;" but it should be considered that he can extricate them with as much greater facility.

Few can be ignorant of the capacity of the Mule to endure labour in a temperature of heat that would be destructive to the horse, who have any knowledge of the preference for him merely on that account, in the West Indies, and in the Southern States.

It is full time to bring our comparison to a close, which I shall do by assuming the position, that the farmer who substitutes Mules for horses, will have this portion of his animal labour performed, with the expense of one spire of grass instead of two; which may be equal, so far, to making "two spires grow where one grew before." For although a large sized Mule will consume somewhat more than half the food necessary for a horse, as has been observed, yet if we take into account the saving in expense of shoeing, farriery, and insurance against diseases and accidents, we may safely affirm, that a clear saving of one half can be fully substantiated. But in addition to this, the *Mule* farmer may calculate, with tolerable certainty, upon the continuation of his capital for *thirty* years: whereas the *horse* farmer, at the expiration of *fifteen* years, must look to his crops, to his acres, or a bank, for the renewal of his—or perhaps, what is worse, he must commence horse jockey at an early period.

The intense interest with which the public mind is at present occupied on the subject of canals now in operation and progress, encourages me to offer the Mule as an important auxiliary in the economy of their management; as I trust, it will not be denied, that on the cheapness of transportation on them, depends their utility as well as profit to the stockholders. The Mule seems so peculiarly adapted for the labour on canals, that compared with the horse, he may be considered almost equal to a locomotive power engine. Among the advantages we have enumerated respecting his use in husbandry, the most of which are applicable to canal labour, that of the much greater security from diseases and casualities, which must necessarily require a great number of supernumerary horses, to prevent interruption in the line of passage, is not the least important, nor is the very trifling expense at which the Mule can be supported during the winter months, as he will bear being taken off his feed till

the boats are about to be launched in the spring, and in a few days can be made fit for efficient duty—while a horse will require at least half feed if he does nothing, or must be fed high for some time before he can resume the labour that will be demanded of him. The same advantages may be derived by his employment on railways.

I cannot resist an impulse to exhibit the Mule in one other point of view. For the movement of *machinery*, the employment of this animal, when judiciously selected, has met with a most decided preference, in comparison with the horse, independent of the economy in using him. And if we consider the rapid, and probably progressive increase of labour-saving machines, in every department where they can be made subservient to the requirements of society, it is evident that there will be a corresponding demand for animal power, as well as for that more potent, derived from the elements; and although the latter may vastly predominate, yet should the horse be employed, and his increase for other purposes continue, as it now does in the ratio of population, the number, at no very distant period, may become as alarming in our own, as it is at present in our mother country. And notwithstanding we may feel secure, from the extent of our territory and extreme diversity of soil and climate, but, above all, from being in possession of *Indian corn*—the GOLDEN FLEECE found by our "pilgrim fathers," when they first landed on these shores; yet such peculiar advantages may not insure us against the visitations of one of the most distressing calamities that a feeling community can possibly be subjected to.

Mason's Farrier.

NOTES OF A NATURALIST.

By JACOB GREEN, M. D.

Remarks upon some of the marine animals which inhabit the North Atlantic Ocean.

On the 12th of May, when about one hundred miles to the westward of Mizen Head, on the coast of Ireland, in my passage across the Atlantic, we encountered one of those long and monotonous calms, which so frequently occur in these latitudes at this season of the year. For two or three days scarcely a breath of wind agitated the air, or a wave ruffled the smooth surface of the ocean. At my request, Capt. Dixey, the obliging master of our packet ship, furnished me with a small boat, in which I made a little excursion on the water, for a mile or two round the vessel, in search of marine animals. Among the number captured were multitudes of the *Cleodoræ*, probably the species called *Cleodora lanceolata* of Peron and Le Sueur.* The body of this little moluscous animal is partly covered by a thin transparent shell, like an inverted pyramid, or a hollow spear head; I observed them in large groupes or shoals, not only close to the surface of the water, but also some fathoms below it. They appeared of a greenish hue throughout, the colour of the animal being distinctly visible through its transparent shell. They seemed to float horizontally in the water, that is, the axes of the conical shell was nearly parallel to the surface. When under the water, their powers of locomotion are exceedingly limited, if they possess them at all. On reaching the hand into the water to capture them, they exhibited no motion, and on drawing into the boat a line, which I had thrown out, many of them were found adhering to it. There seems to be a curious organization of these animals which has escaped the notice of Peron and Le Sueur, who have given us the best account of them. At the apex of the conical shell there is a small globular enlargement, which appears to be filled by minute muscular filaments from the end of the body. By this contrivance the animal is not only attached to the shell, but a small degree of motion between its testaceous and muscular parts may be produced.

Three or four days before the little *excursion* I have just noticed, I amused myself in taking, with a small net, the velellæ, which floated in vast numbers past the ship. The velella is a small, flat, cartilaginous animal, about the size and thickness of a dollar, having a little sail or crest passing transversely over the top or upper surface; this little sail is fringed with blue, and the whole portion of the animal out of the water shines with all the colours of the rainbow. Sometimes the sudden rippling of the waves, or a puff of the wind, would overturn them; but they soon regained their upright position. On placing these animals in a tumbler of sea-water, they exhibited one of the most beautiful objects I have seen. The fringe of the little sail which crosses its back, and the curved and radiating lines on the body of the animal, all presented a fine play of pavonine colours. Attached to the lower surface of the velella I noticed, in almost every instance, the little blue shell, called ianthina, and which I first believed to be the parent or rightful owner of the floating apparatus. It is probable, however, that it makes use of the velella, not only to support itself near the surface of the ocean, but that it also derives from it its principal nourishment, by absorbing its juices. From some observation, I am rather of the opinion

* In Peron and Le Sueur's account of the moluscous animals taken in the Mediterranean near Nice, this is called *hyalea lanceolata*. We are at a loss to account for this mistake in these remarkably profound and accurate Zoologists.

that the animal œconomy of these two molluscæ is singularly adapted to their mutual benefit; the velella supplying nourishment and a floating apparatus to the ianthina, and the ianthina, by its attachment below so balancing and ballasting the velellæ, as to preserve it in an upright position, which is necessary to its motions through the water. However this may be, there appeared, upon closely examining a great number, but little injury sustained by the velellæ from its parasite. Some of the adhering shells were quite young, and others full grown specimens. As far as my knowledge in natural history extends, the ianthina was never before ascertained to be parastitic to the velella, or made use of its buoyancy on the surface of the waves to supply the place of its own beautiful apparatus of air cells. This fact confirms the acuteness of Cuvier, that accurate observer of nature, who justly concluded that the ordinary floating apparatus of the ianthina was sometimes naturally absent; as, in some specimens of the animal which he examined, not a vestige of that organ could be perceived, and no scar or cicatrix on the foot, by which it is secreted, could, on the most minute examination, be discovered.

Both the ianthina and velella seem to throw out a violet coloured liquid, when first captured. The purple fluid discharged by these animals will stain a white handkerchief a fine rich colour. As the ianthina is often found in the Mediterranean sea, it has been suggested, with some plausibility, that this purple fluid may be the basis of the Tyrian dye, or ancient royal purple, accidentally discovered by the dog of Hercules. I regret very much that I could not try the effect of acids and alkalies on this colour. According to Pliny, alkalies gave it a green tint; if so, it is analogous to a vegetable blue or purple. We are informed by Stavorinus, that when the liquid obtained from the ianthina is evaporated to dryness, a powder is obtained, which, on being mixed with gum-water, forms a beautiful purple paint.

Since writing the above, I find, in a late foreign journal, that Mr. Lesson has satisfactorily proved that the Tyrian purple, noticed by Pliny, was undoubtedly derived from the ianthina. He states, from some imperfect trials, that the colour of the ianthina will form a valuable re-agent, for it passes very readily to red, under the action of acids, and returns to blue under that of alkalies. With the oxalate of ammonia it gives a precipitate of a dark blue colour, and with the nitrate of silver a very pleasant greyish blue, both of which are good colours for drawing.

I am doubtful as to the specific name both of the ianthina and velella above noticed. The velella approaches very near to the *V. mutica*, but the tentaculæ on the under surface cover it completely, except a narrow space at the margin, and a small portion immediately round the mouth; they are also longer near the margin, and gradually diminish in length as they recede inwards. If the animal proves to be new, I shall call it *Velella atlantica*.

The ianthina is very closely allied to the *I. globosa* figured in Swainson's Zoological Illustrations, though the shell is by no means so large and beautifully coloured as those there represented.

SUMMER DUCK, OR WOOD DUCK.

[Plate XXII.]

Le Canard d'Eté, Briss. vi. *p.* 351. 11. *pl.* 32. *fig.* 2.—*Le beau Canard huppé*, Buff. ix, *p.* 245.—*Pl. Enl.* 980. 981.—*Summer Duck*, Catesby, i, *pl.* 97.—Edw. *pl.* 101.—*Arct. Zool. No.* 943.—Lath. *Syn.* iii. *p.* 546.—*Anas sponsa*, Gmel. *Syst.* i, *p.* 539, *No.* 43.—*Ind. Orn. p.* 876, *No.* 97.—Philadelphia Museum.

"This most beautiful of all our Ducks, has probably no superior among its whole tribe for richness and variety of colours. It is called the *Wood Duck*, from the circumstance of its breeding in hollow trees; and the *Summer Duck*, from remaining with us chiefly during the summer. It is familiarly known in every quarter of the United States, from Florida to Lake Ontario, in the neighbourhood of which latter place I have myself met with it in October. It rarely visits the seashore, or salt marshes; its favourite haunts being the solitary deep and muddy creeks, ponds, and mill dams of the interior, making its nest frequently in old hollow trees that overhang the water.

The Summer Duck is equally well known in Mexico and many of the West India islands. During the whole of our winters they are occasionally seen in the States south of the Potomac. On the tenth of January I met with two on a creek near Petersburg in Virginia. In the more northern districts, however, they are migratory. In Pennsylvania the female usually begins to lay late in April or early in May. Instances have been known where the nest was constructed of a few sticks laid in a fork of the branches; usually, however, the inside of a hollow tree is selected for this purpose. On the eighteenth of May I visited a tree containing the nest of a Summer Duck, on the banks of Tuckahoe river, New Jersey. It was an old grotesque white oak, whose top had been torn off by a storm. It stood on the declivity of the bank, about twenty yards from the water. In this hollow and broken top, and about six feet down, on the soft decayed wood, lay thirteen eggs, snugly covered with down, doubtless taken from the breast of the bird. These eggs were of an exact oval shape, less

From Nature and Drawn by [illegible]

SUMMER DUCK.

[illegible] Chilus & Inmans Press.

than those of a hen, the surface exceedingly fine grained, and of the highest polish and slightly yellowish, greatly resembling old polished ivory. The egg measured two inches and an eighth by one inch and a half. On breaking one of them, the young bird was found to be nearly hatched, but dead, as neither of the parents had been observed about the tree during the three or four days preceding; and were conjectured to have been shot.

This tree had been occupied, probably by the same pair, for four successive years, in breeding time; the person who gave me the information, and whose house was within twenty or thirty yards of the tree, said that he had seen the female, the spring preceding, carry down thirteen young, one by one, in less than ten minutes. She caught them in her bill by the wing or back of the neck, and landed them safely at the foot of the tree, whence she afterwards led them to the water. Under this same tree, at the time I visited it, a large sloop lay on the stocks, nearly finished, the deck was not more than twelve feet distant from the nest, yet notwithstanding the presence and noise of the workmen, the ducks would not abandon their old breeding place, but continued to pass out and in as if no person had been near. The male usually perched on an adjoining limb, and kept watch while the female was laying; and also often while she was sitting. A tame goose had chosen a hollow space at the root of the same tree, to lay and hatch her young in.

The Summer Duck seldom flies in flocks of more than three or four individuals together, and most commonly in pairs, or singly. The common note of the drake is *peet, peet;* but, when standing sentinel, he sees danger, he makes a noise not unlike the crowing of a young cock, *oe eek! oe eek!* Their food consists principally of acorns, chesnuts, seeds of the wild oats, and insects. Their flesh is inferior to that of the Blue-winged Teal. They are frequent in the markets of Philadelphia and New York.

Among other gaudy feathers with which the Indians ornament the calumet, or pipe of peace, the skin of the head and neck of the Summer Duck is frequently seen covering the stem.

This beautiful bird has often been tamed, and soon becomes so familiar as to permit one to stroke its back with the hand. I have seen individuals so tamed in various parts of the Union. Captain Boyce, collector of the port of Havre-de-Grace, informs me that about forty years ago, a Mr. Nathan Nicols, who lived on the west side of Gunpowder creek, had a whole yard swarming with Summer Ducks, which he had tamed and completely domesticated, so that they bred and were as familiar as any other tame fowls; that he (Capt. Boyce) himself saw them in that state, but does not know what became of them. Latham says that they are often kept in European menageries, and will breed there.

The Wood Duck is nineteen inches in length, and two feet four inches in extent, bill red, margined with black; a spot of black lies between the nostrils, reaching nearly to the tip, which is also of the same colour, and furnished with a large hooked nail; irides orange red; front, crown, and pendent crest rich glossy bronze green ending in violet, elegantly marked with a line of pure white running from the upper mandible over the eye, and with another band of white proceeding from behind the eye, both mingling their long pendent plumes with the green and violet ones, producing a rich effect; cheeks and sides of the upper neck violet; chin, throat, and collar round the neck pure white, curving up in the form of a crescent nearly to the posterior part of the eye; the white collar is bounded below with black; breast dark violet brown, marked on the fore part with minute triangular spots of white, increasing in size until they spread into the white of the belly; each side of the breast is bounded by a large crescent of white, and that again by a broader one of deep black; sides under the wings thickly and beautifully marked with fine undulating parallel lines of black, on a ground of yellowish drab; the flanks are ornamented with broad alternate semicircular bands of black and white; sides of the vent rich light violet; tail-coverts long, of a hair-like texture at the sides, over which they descend, and of a deep black glossed with green; back dusky bronze, reflecting green; scapulars black; tail tapering, dark glossy green above, below dusky; primaries dusky, silvery hoary without, tipt with violet blue; secondaries greenish blue, tipt with white; wing-coverts violet blue tipt with black; vent dusky; legs and feet yellowish red, claws strong and hooked. The above is an accurate description.

The female has the head slightly crested, crown dark purple, behind the eye a bar of white; chin, and throat for two inches, also white; head and neck dark drab; breast dusky brown, marked with large triangular spots of white; back dark glossy bronze brown, with some gold and greenish reflections. Speculum of the wings nearly the same as in the male, but the fine pencilling of the sides, and the long hair-like tail-coverts, are wanting; the tail is also shorter."

SHOOTING PARTIES.

At an annual shooting match at St. Stephen, N. B. 30th ult. two parties of seven men each, returned 100 partridges, 6 black ducks, 6 robins, 17 woodcocks, 70 squirrels, 2 yellow hammers, 2 snipes, 2 blackbirds, 1 pigeon, 2 jays, 1 rabbit, 1 bear—total 214.

PROCEEDINGS OF THE CINCINNATI ANGLING CLUB.

Doubt not, therefore, sir, but that Angling is an art worth your learning: the question is, rather, whether you be capable of learning it? for Angling is somewhat like poetry, men are born so: I mean with inclinations to it—though both may be strengthened by discourse and practice: but he that hopes to be a good Angler, must not only bring an inquiring, searching, observing wit; but he must bring a large measure of hope and patience, and a propensity to the art itself; but having once got and practised it, then doubt not but Angling will prove so pleasant, that it will be like virtue, a reward to itself.

And for you that have heard many grave, serious men, pity anglers, let me tell you, sir, there be many men that are by others taken to be serious and grave men, whom we consider and pity. Men that are taken to be grave because nature has made them of a sour complexion—money-getting men—men that spend all their time, first, getting, and next in anxious care to keep it—men that are condemned to be rich, and then always busy or discontented; for these poor, rich, men, we Anglers pity them perfectly, and stand in no need to borrow their thoughts to think ourselves so happy.

IZAAK WALTON.

PISCATORIAL CELEBRATION.

Some lovers of the *Rod*, resident in this city, conforming to the spirit of the times in regard to *associations*, have recently united themselves under the style and title of the Cincinnati Angling Club. A constitution has been adopted, and by-laws established for their future government. The number of members is limited to *twenty-five*. The officers are, a President, Vice President, Secretary, and three Counsellors. Four regular meetings are to be held in each year, the last of which,—the first Thursday of October,—is the Anniversary, at which time the members of the Club dine together, and have either a discourse delivered to them upon angling and ichthyology, or else a chapter read to them from the pages of "honest old Izaak Walton." A record of all the *piscatory* proceedings of the members, is kept by the Secretary, it being the duty of each one of the Club, to report, upon his return from an angling excursion, the nature and extent of his success with the finny tribe.

The first anniversary of the Club took place on Thursday of last week. It was celebrated at Col. William Clark's, on White Water, about twenty miles north-west of this city. A part of the brethren made a lodgment at this point on Wednesday, and were joined by others, with a few invited guests, (among whom, thanks to our good luck, we were numbered,) on the morning of the following day. Of the whole number present, not more than 12 or 15 engaged with the rod. These angled for *a day and a half*, and with capital success, having caught within that time, *three hundred and fifty-three* Bass and Salmon, many of the former being unusually large. One of the Bass, caught by the superior skill of the President, after a severe contest, weighed *five pounds two ounces*, being the largest fish, of that kind, ever taken by an angler from the waters of the Miami.

At five o'clock, P. M. the company, about thirty in number, sat down to a table, richly stored with the ichthyological treasures, which their skill had drawn from the neighbouring streams. They were served up in every variety of form that could delight the eye or please the taste, having been dressed by experienced cooks, in nine or ten different modes. The "noble Bass" caught by the President, was placed in front of him, at the head of the table. After the company had borne ample testimony to the excellence of the dishes, and giving satisfactory proof of possessing a very reasonable portion of *good taste*, the following intel-

lectual exercises supervened upon those of a more physical character. The President read the first of the regular toasts:

1. *The object of our Association*—To blend social amusement with healthy recreation.

After this toast was drank, the President announced that a brother member would favour the company with a discourse, which he had been appointed to deliver. This was listened to with profound attention, and received with loud applause. We have been kindly promised a copy of this discourse, which we shall place before our readers next week, satisfied that it will be the means of converting many of them to the noble sports of the *rod*, and of adding something, at least, to the amusement of all.

After the address was concluded, the remainder of the toasts were drank.

2. *The day and the occasion*—Our first anniversary—may we live in friendship and harmony to enjoy many more.

3. *The art of Angling*—Of great antiquity and ingenuity—not to be *caught* by every *Buckeye* who attempts to *hook* it.

4. *Water*—The element of our art—"the eldest daughter of creation," and the mightiest of all.

5. *Fish*—In variety and numbers, the most wonderful of the animal creation, and the source of food and amusement to man.

6. *The memory of "honest Izaak Walton"*—The great "father of anglers"—celebrated alike for his skill in the art, and his kind and benevolent nature.

7. *The memory of Charles Cotton*—The experienced angler, and adopted son of honest Izaak.

8. *The memory of Wynkin de Worde*, of the 14th century—Author of the first known treatise on angling.

9. *Our brother Anglers* throughout the world—"May their course be as clear as the stream that they love."

10. *Our Country and its Institutions*—May they who plot against either, be *caught* in their own *nets*.

11. *The memory of Washington.*

12. *The members of the "Pittsburg Angling Club"*—May their *tackle* and their *luck* never fail them.

13. *The Schuylkill Fishing Company*—Still flourishing in full vigor at the advanced age of 98—a bright example of sociability and uninterrupted harmony.

14. *The Fair*—"Fishers of men."

A number of volunteer toasts were drank, of a technical and spirited kind. Among them the President of the Club and the Orator of the day were "freshly remembered." At dark, the company retired from the table, and spent the evening pleasantly together. After breakfast, next morning, a part of them returned to the city: a few stopped at the Miami and angled for an hour or two, with such success, as to increase the whole number of fish taken on the occasion, to *four hundred and thirty eight*.

It gives us much pleasure to bear testimony to the order, cheerfulness, and strict propriety of deportment, on the part of the members of the Club, which prevailed throughout the whole of this pleasant and healthful excursion; and we doubt not that all our readers, could they have partaken of the President's *five pound Bass*, would unite with us in wishing, in the language of "honest old Izaak," that "*the east wind may never blow, when*" the Cincinnati Angling Club "*go a fishing.*"

An Address, delivered by appointment, before the Cincinnati Angling Club, at their late Anniversary. By a Member. Published by order of the Club.

It hath long, my brethren, been a source of regret to the friends of the fame and prosperity of the goodly city of Cincinnati—a city, wherein are to be found many of the most philanthropic men of our age, as well as a numerous body of those who are skilful and deservedly eminent in almost all the avocations of life, and where most of the liberal arts and sciences receive countenance and encouragement—that the science of ichthyology has not, in that city, heretofore, been enabled to obtain the aid which it might derive from the exertions of a well-organized body of anglers; that the lovers of the manly and primitive amusement of angling have suffered their favourite sport to be carried on in a loose and desultory manner, without order or system; and that the heart-hardening pursuits of wealth, the strife-engendering devotion to party-politics, and a degrading submission to the enervating influence of idleness, should have engrossed so much of the time and talents that might be far more pleasantly and profitably spent in the healthful and cheering exercise of angling.

It has been a source of regret, that those relaxations from the more severe and important duties of this life which our nature requires, have been suffered to remain under the influence of chance, and subject to the control of accident, instead of being, as they ought to be, philosophically regulated, so as to be productive of the influences they are designed to exert upon our characters and our happiness. It is, however, highly gratifying to me, to be, at length, enabled to congratulate you, my brethren, upon the commencement of a new era in the history of our city,—an era forming the establishment of the Cincinnati Angling Club, —through whose exertions we trust that the reproach of such a state of things as has heretofore existed in relation to our amusements, will be wiped away, and a barrier placed against the inroads of effeminacy and vice into the most im-

portant periods of life—the hours of relaxation and social enjoyment. I felicitate you upon the organization of a society, whose exertions will show to our fellow citizens, that the finny treasures of our waters have not been bestowed upon us in vain; that they are not, by all the members of our community, unheedingly and unthankfully neglected: but that the lovers of science, the lovers of good eating, the lovers of health and good manhood, and the lovers of good tempers and cheerful dispositions, are enabled to reckon among the many advantages enjoyed by our city, the possession of a society whose objects are to increase the quantum of all these good things, to develope the various resources of our waters—

> "To dive into the bottom of the deep;"
> "And pluck up" bass and salmon on our hooks:

and, in short, to render available that portion of the bounties of Providence, of which a too exclusive attention to terrestrial affairs has hitherto caused an unwarrantable neglect.

It has formerly been a mooted question among the philosophers and men of science, "what is (*par-excellence*) the use of rivers?" The answer given by the celebrated Brindley is doubtless familiar to you all, viz.: "To feed navigable canals." The correctness of this answer has been questioned by many; and honest Izaak Walton, had he been required to give an answer to it, would probably have given the following, viz.: "To feed the lovers of good eating with delicacies which the earth does not produce." There are, doubtless, many worthy men, whose answer to this question would be, that the principal use of rivers is to afford a theatre for the display of the locomotive powers of the steam engine. Since the discovery of rail-roads, however, many are of opinion that they are scarcely needed for this purpose. But no discovery can ever be made which will supercede the necessity and utility of rivers to fishermen. Many other answers to this question have been given, which I will not fatigue you by relating, but proceed to state the answer which *we* may give to this question whenever it may be propounded to us, with confidence that it cannot be controverted; and which is,—that the use of rivers is to nourish and preserve materials for the display of the skill and talents of the Cincinnati Angling Club.

The neglect of the wealth of our rivers has been a just theme of reproach to the inhabitants of the Western country in general. So great has been this neglect, that when a certain erudite and profound professor undertook to enumerate and describe the fishes of the Ohio, he discovered many species which were utterly unknown to any of our citizens—many, indeed, which to this day, remain unknown to all but this learned philosopher himself. Of a renowned hero of former times, the celebrated Tom Thumb, it was said that "he made the giants he killed;" and it has been said in like manner of our learned Doctor in Philosophy, that he made many of the fishes he described. Whether he was entitled to this additional honour, could not, in consequence of the lamentable defect of public curiosity at that time, be determined. Had an organized club of expert anglers, like ours, then been in existence, all doubts on the subject might have been removed, and the world at large might have awarded to the learned Professor that honour which at present is bestowed upon him only by some of his most zealous friends; the honour, namely, of having made, as well as described, a great number of his fishes of the Ohio. It is said to have been the practice of many valiant generals, to give existence, upon paper, to a vast number of the enemies whom they slew, and thereby reap the renown of destroying, if not of making them: and the learned ichthyologist, who does not seek the honour of killing his fishes, ought not certainly to be deprived of giving them all the existence they ever possessed.

It is truly lamentable to observe the great and increasing neglect of the finny tribes, by all the people of modern times; and it is worthy of inquiry, whether it be not to this neglect that we are to attribute the amazing degeneracy of fishes since the days of the ancient philosophers—degeneracy both in bodily size and intellectual endowments. In respect to the first of these qualifications, it appears that they acquired the highest degree of celebrity under the imperial patronage of the Roman rulers; and to such magnificent dimensions did they attain, that the Roman Senate, as history informs us, was called upon, among other grave and weighty deliberations, to admire the parts and proportions of one that was deemed worthy, in consequence of its extraordinary size and beauty, of the Emperor's table alone; and therefore worthy the attention of that august body, the Senate of Imperial Rome. But with respect to their mental qualities, they appear to have arrived at their highest point of perfection at an earlier period. Plutarch gives us information of certain tribes of fishes, that were in the habit of displaying very profound knowledge of the mathematical sciences, and of the art of perspective; and Pliny and Aristotle, as well as many other ancient philosophers, record many instances of their profound knowledge in other branches of science. Their correct appreciation of theological instructions is recorded in the history of Saint Anthony, whose preaching

> "They thronged to hear, the legend tells,
> "Were edified, and wagged their tails."

But since that period, since the time when all learning and science were overshadowed by the gloom of the dark ages,

we have little or no evidence of their cultivation of any of the various branches of knowledge. Even the art of navigation, in which they might naturally be expected most to excel, they appear to neglect far more than is proper; for we find that the salmon do not now visit many of our rivers, (the Connecticut, for instance,) to which they formerly resorted with great regularity; and the shad do not display that spirit of adventurous roving which we should be glad to see them exhibit, by paying annual visits to the Ohio; which, doubtless, they would do, if they possessed that extent of knowledge and good taste which, according to the authors to whom we have referred, characterized them in ancient times.

It has lately been proposed by an esteemed and respectable author in our city, that some measures be taken to instruct certain tribes of fishes in such branches of knowledge as would induce them to emigrate to our western waters, where, we have no doubt, they may be as much improved in their circumstances as the emigrants to the western lands, and it is to be hoped that the suggestions of this valuable author may receive the attention they merit. It is little to the credit of the citizens of the west, that their attention is exclusively devoted to terrestrial affairs, that the aquatic portions of our country are almost totally neglected; and instead of receiving a share of attention equal to their importance, have been abandoned to the management of those who looked but little below the surface of their subject, and who are ignorant of the habits, qualities, and capabilities of the inhabitants of our western waters. No cares have ever been bestowed upon them, tending to their improvement; and no system of management has ever been adopted, by which their most valuable tribes might be encouraged, and their numbers increased. On the contrary, many of them have never even received such names as are befitting fishes; but have been obliged to bear the cast-off names of land animals, such as buffaloes, red-horses, black-horses, cats, &c., names which are totally unfit, and, indeed, quite insulting, when applied to the inhabitants of our rivers, who are as fairly entitled to names of their own, as any of the quadrupeds or bipeds on land;—to names that are appropriate and descriptive—suitable for fishes of respectable rivers. I trust that this matter will receive the attention of this worthy society, as some other subjects, which very justly claim our earliest care, and which I am confident will not be neglected, I mean the attention of each individual to those personal qualifications that are necessary to qualify him for excellence in the important art of angling.

In a paragraph recently republished in our journals, from an English paper, the author, referring to the expected emigration of the late king of France, Charles X., to the United States, suggested the idea, that he, and the former king of Spain, who had long been a resident in this country, may angle in the same streams, &c., a suggestion which exhibits a more correct appreciation by its author, of the important art of angling, than of the character of the person whom he supposed might be led to cultivate it in America; and nothing but that blind devotion to kings, which leads men to attribute to them none but elevated sentiments and ennobling pursuits, could have inspired the idea that a man of the character of Charles X. could take delight in the sport of angling. A man like him, tyrannical, oppressive, bigoted, and wrong-headed, is of a character the very reverse of that of a genuine angler. The kings of modern times, have, indeed, none of them those characteristics which would entitle them to membership in the Cincinnati Angling Club: and it is therefore to be hoped that the work of reform may not end in France, but go on until governments cease to be oppressive, and rulers possess that spirit of patient perseverance in their duties which characterizes the real angler. My brethren,—kings have seldom been anglers—they have seldom possessed those high and ennobling qualities which lead to a cultivation of this pursuit, and therefore the world has no further need of them. Especially, we want no kings nor ex-kings in these United States. Prophets and Apostles have been fishers; but kings and emperors have seldom possessed sufficient good taste to imitate them: and although there is one sovereign in Europe who professes to be their successor, and still retains among his insignia some fishing implements; yet the testimony of history proves that Popes are more like kings than like Anglers or Apostles, and are therefore too degenerate to be of any use in this world. We trust that also they will be dismissed, with other useless incumbents of office, in order that the dignity which should belong to the employment of a real fisherman, may not be degraded by the proud pretensions of the occupants of the Papal throne to the character of fishers. For they are men who for centuries have not practised nor encouraged the angler's art, and have only honoured it by external display —men who differ little from kings and other dignitaries, that despise or neglect those qualities in their fellow men which are most essential to their health and happiness, and who uphold and cherish the sickly, indolent, and useless portion of their species, more than the manly, robust, and useful.

But of kings and potentates we have said enough—more than they deserve, since they only serve as warnings to us, to avoid the vices by which their characters are degraded, by which they not only become unfitted for piscatorial exercises and duties, but are even, probably, rendered so effeminate and worthless, as not even to wish to partake of them. It is far more pleasant to speak of men who are ennobled by the qualities of the mind and heart, and not by

the accidents of birth and fortune; men who are superior to any of the dignities of public stations, and worthy to be classed among the examples for anglers to follow. Of these, the good old patriarch of fishermen, Izaak Walton, to whose name the epithet of "honest" is universally attached, as comprehending in it, numerous and varied virtues, will most readily occur to you all; and with him will naturally be associated in your minds, his friend and disciple, the worthy Cotton, the imitator of his virtues, and associate of his fame. To their characters the world has learned to do justice; and to them it is chiefly indebted for the means of justly appreciating the pursuits of the angler.* Their names and their fame are familiar and dear to us all.

By the death of the celebrated Sir Humphrey Davy, not only have the cultivators of the sciences, but the lovers of angling, lost a friend, whose good taste and highly cultivated mind induced him to give that preference to their favourite sport, to which he is entitled, and led him to value his own fame as an angler more highly than the celebrity which he acquired from all other sources; and the last of his works—those works which have not only immortalized his own name, but added to the glory of the nation and the age in which he lived—bears testimony to the pleasure which he derived from, and the esteem in which he held, this manly and honourable recreation.

Of Sannazarious, Davors, Chalkhill, Markham, Wynkin de Worde, and many other worthies, I regret that we have so few memorials preserved that we cannot make our minds familiar with their characters. Their respect for our art is, however, a proof of their merit, an assurance that their characters were amiable—and presumptive evidence of the soundness of their minds. But it is unnecessary to bring forward any examples to the members of this club for the purpose of showing them what are the virtues they ought to cultivate. You all know that both your tempers should be smooth and uniform—that, as your manners, so should your rods be, graceful, and adapted to the occasion that calls them out into use—that your hooks, like your wits, should be sharp, and carefully guarded, that they may not hurt either yourselves or you friends; that your fishing tackle in general, as well as your domestic affairs, should always be kept in good order, and receive all the attention which you are required by your duty to pay. In short, that you should exhibit to the community such examples of the social and civil virtues as are befitting those who are worthy to be members of this honourable club.

My brethren,

Although the chief object of our association is to spend in healthful and rational recreation, those hours of relaxation from the toils and labours of life, which the constitution of our nature requires; yet our recreations are not those which abase or degrade the faculties of either mind or body, but on the contrary, they are such as give to each that salutary exercise which is essential to its preservation and improvement. They are such as inspire a love of nature and of nature's works—a keen susceptibility to her beauties, and a lively enjoyment of her varied bounties. These are the legitimate sources of human pleasures. They are the pleasures of the angler. For the enjoyment of such gratifications, he adjures the influence of sloth and idleness, as you all have done on the present occasion, and goes forth as soon as the "high lawns appear" "under the opening eyelid of the morn," and long before "the star of day" flames "in the forehead of the morning sky," enjoying the delights of invigorated health and the anticipations of successful exertions. The vigor of body, the elasticity of mind which he derives from early exercise—the excitement of hope, the view of the beauties of nature, which he has learned justly to appreciate, and the sounds of the varied "melodies of morn," all combine to excite feelings of the highest order of enjoyment, feelings which tend to make him, on his return to duties and his employments, a more amiable and more useful man. For such pleasure and such sentiments as he cultivates, are not those which excite the desire of concentrating in self, all the good things of life, and all the gratifications which are presented to his view, but on the contrary, their tendency is to strengthen and cherish those kindly affections and warm charities which constitute all the value of social life,—without which, existence would be a burthen, and reason a curse.

The influence of our mode of recreation on the temper and feelings, is healthful and benignant, softening their asperities and correcting their deformities—exciting none but benevolent wishes to our neighbours, and general philanthropy to mankind. Scandal, backbiting, all manner of evil speaking, with all the diseases of querulous idleness, are therefore incompatible with the characters of those who are worthy of the honourable certificate of membership in the Cincinnati Angling Club, and any appearance of a disposition to indulge these vices, should be considered as indicative of a diseased state of body and mind, which ought to call forth renewed exertions and unceasing vigilance, for its entire eradication.

It has been very correctly remarked, that men are civilized by their amusements far more than by their serious occupations, and these vices of which I have just spoken, are among the strongest marks of defective civilization. They will, therefore, doubtless, be excluded from this society, and considered as decided proof of unworthiness of its honours, and incapacity to partake in a suitable manner of its enjoyments.

The pleasures of the social board, of which we have now

been partaking, are also legitimate and salutary enjoyments, when, as in the present case, we are prepared for them by exercise, and partake of them with temperance. The gratification afforded by assembling, as we now do, to celebrate our annual festival, is brightened by the considerations that the delicacies of the table which have formed the principal portion of our repast, were obtained by our immediate exertions—were the fruits of the recent display of our skill, and we are taught by the additional satisfaction thus afforded us, how important it is to the full and perfect enjoyment of any of the good things of this life, to possess a consciousness that they have been acquired by our own labours. Without this feeling, every pleasure is imperfect; is insipid; with it, scarcely any thing is too insignificant to increase the sum of our happiness, and awaken those emotions which give a zest to all the enjoyments of life.

GROUSE SHOOTING.

Messrs. Editors:

I have read, with exceeding great pleasure, several interesting accounts of successful sporting in your Cabinet of Natural History and American Rural Sports. I am extremely fond of field sports, and consider it an obligation on every fair sportsman to contribute to a meritorious work like yours, such facts or incidents, as may be the result of his own experience or observation, during his hunting excursions.

Under this impression, I shall offer for your insertion, a brief and unvarnished account of a few days Grouse shooting which I had this autumn, in company with my valued friend and keen sportsman, Mr. E. P. of this city. We left New York on the 14th of October; our destination was a certain district in the honest and hospitable State of Pennsylvania; the particular locality, not being material to the plot of my story, is not necessary to mention. After a pleasant, but very rapid journey, we arrived on the ground on the 16th. I took no notes of things by the way, because my mind and its thoughts were so fully occupied with anticipations of success. On our arrival, we made inquiries respecting the objects of our long journeying, the beautiful, the inimitable Grouse! and we were informed that some had been occasionally seen in the vicinity, but that (as we well knew before) it required almost a *native* to find or kill them. However, like most sportsmen, we possessed conceit enough to believe ourselves competent for the enterprise we were about to undertake, and after inquiring whether a suitable person as a guide could be obtained, we were directed to a man who was perfectly acquainted with the country; and him, therefore, we accordingly engaged for the purpose, and employed his services during the time we remained. And, indeed, without giving a minute description of the man, to sum up all in one all-inclusive appellation, our guide proved himself to be a perfect "Leather Stocking;" keen eye, steady hand, natural integrity, and standing six feet two, without his leggins.

Having thus arranged matters for the coming dawn, and partaken of a sportsman's supper with an appetite which needed no coaxing, which, with puffing away time with the fragrant smoke of the soothing segar, and listening to marvellous tales of hunting and fishing, we passed away the hours pleasantly enough, until the last candle in the house was nearly burnt out, and the buxom old landlady sat bobbing for next morning, as an Indian would at gnats.

The next morning broke forth in that enchanting splendour, which so particularly characterises one of our autumnal days. The mellow light, softening every object that it touched, rested upon the interminable forests and gilded the mountain sides, tinged as they were with every variety of magnificent colours.

Our honest guide was at the door; we were equipped, and all impatience to touch the feathers of the king of our American feathered game. We sallied forth into the oak-crowned hills, with our two setter dogs, Mack and Dash, and by an early hour in the afternoon we bagged five brace of heavy Grouse. The weather proving warmer than we anticipated, we decided, after the most sober consultation, not to go out the next day, fearing that if we killed more they would spoil. We, therefore, contented ourselves by going a trouting, our guide having awakened our curiosity by offering to exhibit *his* method of taking that shy fish. I consider it advisable not to describe this novel plan, because it is contrary to the rules of true sport, and the fish are taken by it so rapidly, and in such quantities, that, if generally adopted, it would tend to exterminate the species. After he had taken about a dozen Trout in a very few minutes, we prevailed upon him to desist from his unsportsmanlike poaching. As there were some wood ducks in the vicinity, I tried, at our guide's suggestion, for that beautiful bird with his long gun. And here I would remark, that those Pennsylvania Highlanders never turn out of doors without these long guns, which, by much experience, they well know how to use. We started but two Ducks; one, a fine Wood Duck, I killed while passing by a still and lonely pond, among the silent woods, which is ever a favourite haunt of that timid bird. Our guide killed the other, which he called a White-belly, of a very fair kind. In this manner, we spent our second day.

The ensuing morning we started again for the scrub-oaks, and had excellent sport. We bagged eight brace more of

fine Grouse, and, from appearances this day, we had reason to calculate upon a continuation of success on the morrow. We were not disappointed, for by ten o'clock the next morning, we had secured three brace more; but the sun coming out very warm, or, as our worthy guide remarked, "*rather hottish*," we concluded to start for New York, in order that we might carry our birds home in good order. We arrived in our fair city on the 22d, highly gratified with our excursion, and had the pleasure of surprising our sporting friends, with rather an uncommon show of *prime* game. J. S.

New York, Nov. 10, 1831.

HABITS OF THE RUFFED GROUSE, OR PHEASANT.

(Tetrao umbellus.)

On reading the anecdote of Professor Green in your interesting work some time since, on the stupidity of this bird, it brought strongly to my recollection the fact of having seen a fine male of the species, confined in a wooden cage, in the possession of Isaac Deniston, Esq., of this city, which had been taken a few days previous under circumstances very similar. This was in the fall of 1814, it was discovered early in the morning seated in the piazza near the door of that gentleman's dwelling, and without difficulty made captive. This bird was kept about one week and then presented to a friend residing in Greenbush, opposite the city, here it remained about the same length of time, when by some accident it perished.

In conversing on the subject, a few days since, with a friend of mine in this city, a genuine sportsman and an accurate observer of every thing appertaining to the sports of the field, he informed me that, about three years since, in the fall of the year, being on a shooting excursion in the neighbourhood of Claverack, Columbia county, New York, he obtained a fine living specimen of this bird, from a gentleman residing at that place, who stated to him, that it had been captured a day or two previous by one of his domestics, in the cellar-way of his dwelling. This was brought with him to the city; in a few days it began to droop, and died in the space of a week of its confinement. In both of these cases, the individuals who captured them were of opinion, they had been frightened by a hawk or some other bird of prey.

Early in the morning of a severe cold day in the winter, about fifteen years since, I saw a number of lads pelting with frozen flakes of snow some object which had taken its station on the roof of a one story dwelling, situated in the oldest and most populous part of our city. On observing it attentively, I discovered it to be a Ruffed Grouse; it sat near the chimney, as if dozing, apparently unconscious of the many missiles which flew in every direction about it; one at length struck it lightly on the wing, it stretched forth its neck a moment, as if for recollection—shook its plumage—glid silently over the house, and disappeared from my sight.

The winter was remarkably severe. A large quantity of snow had fallen, and entirely covered the ground for an unusual space of time; when the spring returned and nature had once more put forth her bloom, the farmers in the vicinity were astonished at discovering a considerable number of the bones and partially decayed carcases of this species of Grouse, strewed along the hedges, and in the deep woods in the neighbourhood of their dwellings.* This mortality they attributed to their usual food being buried too deep beneath the snow for them to obtain access to, consequently, they perished from hunger. On learning this fact, during the following summer, and hearing it repeatedly since that time, I naturally concluded that this bird had been compelled to seek among the habitations of man, the food necessary for its existence, which nature had denied it elsewhere. I have now no doubt but its appearance in the city, was more properly occasioned by the annoyance of some bird of prey.

Yours, &c.
JAMES EIGHTS.

Albany, Nov. 1, 1831.

BASS FISHING IN THE WEST.

Messrs. Editors:

There is an excellent essay on the "Usefulness of Sporting," in your first number, under the signature of "J. T. S." in which I agree most cordially with the writer, except where he stiles Angling a "mild, subdued, and *feminine* exercise." It may be so *in the East*, but here, in the *West*, it is altogether a different business.

Who, in the vicinity of our "great Western Emporium," has not heard of the "Cincinnati Angling Club," and its exploits among the "finny tribe?" None, I will venture to say, can follow a party from this Club on a fishing excursion, for a single day, without feeling the intense excitement created in the members by the delightful and manly exercise of "Bass Fishing," and entering fully into the enjoyment of a sport, which is every thing *but* "feminine."

* This I have recently understood was also the case last spring.

As you have never partaken of a day's sport with the Club, I will give you a brief sketch of their usual excursions.

Some four or five of the members, as leisure or convenience permits, (for they never suffer this amusement to interfere with business avocations,) select, with the best skill, a good day, and an early hour is fixed for starting on the day chosen, say 3 o'clock in the morning. Precisely at the time and place appointed, (for it is made a point of honour to be punctual) the members assemble, "furnished and equipped" as their by-laws direct, and set out in their fishing dearborns, for the great Miami, about sixteen miles distant. After a "Jehu-like" drive of three or four hours, in the greatest glee, they arrive at the fishing grounds, and prepare for the day's sport.

In the first place, the minnow bait must be caught; a net is produced; two of the members bounce into the water up to the middle, and soon procure bait enough for the whole party, of the "real shiners" and "leather-mouths." Then, about sun rise, the fishing commences. The place selected for Bass is generally in the swift water under mill dams, or in deep rocky holes near them. The angler wades into the water, or sits on a rock or log, (the *first* is generally preferred, for no "real Bass Angler" feels like fishing, unless wet to the waist-band.) There is great emulation to take the *first* fish, it being considered a good omen. The sport commenced, the party continue with *untiring patience* until about 10 o'clock, when they partake of a frugal breakfast of bread and ham, or something in that way, moistened with a little good wine, for which all good anglers have a relish. The meal partaken with cheerfulness, and an appetite which active exercise never fails to create, is enlivened by a recital of the exploits of the morning, which, with good luck, may amount to twenty or thirty fish.

The sport is resumed with redoubled energy, until three, o'clock when the party dine, much in the same manner as they breakfast. About five in the afternoon, after putting on dog-cloths, they start for home, and arrive near nine, with generally one hundred to one hundred and eighty fine Bass, weighing each from an half to three pounds, the greatest number of middle size, having travelled upwards of thirty miles, and fished faithfully for nine or ten hours. Now, if there is any thing "feminine" in all this, I have mistaken the term.

Some of the members take excursions of two or three days at a time, and lodge in the neighbouring farm houses at night, or encamp on the banks of the river, as the hardy "hunters of the West" have often done before them. Surely *this* is not "*feminine.*"

The Bass is a beautiful fish, with its dark olive back and golden sides; none, for the table, can be more delicious. It bites readily at the minnow bait, and is considered by "the *fancy*" to be an "exceeding *game* fish," frequently springing two or three feet out of the water when hooked, and affording the most delightful sport to the angler. He who is fortunate enough to hook a four or five pound Bass, has to exert his utmost skill to secure the fish and save his tackle from destruction. It runs off with the line like a young whale, and without the reel, it would be impossible for the angler to tire his fish sufficiently to land him. But when he *is* taken, what rejoicing it excites in the Club, and with what pleasure does the secretary record, "a five pound Bass landed by President H. or Counsellor G. after a most arduous though skilful and interesting struggle of thirty-five and an half minutes."

Our principal and best fishing is in the fall season, after the first early frosts, and during the Indian summer, that pride and boast of our western autumns; *then* it is indeed a delightful and healthy recreation.

A complete record of the proceedings of the Club is kept, and the taste for angling, which is continually increasing among the members, together with the strictest propriety of conduct, which, even without their rules, would always be observed, give promise that this association will endure with the lives of the members, and be continued by their descendants for ages, while the Bass inhabit the waters, or a taste for angling is cherished.

PISCATOR.

NEWLY INVENTED RIFLE.

This Rifle was invented, and a patent taken out for the same, in the year 1829, by Mr. J. Millar of Rochester, N. Y. The patentee, who is not a Rifle manufacturer by trade, (but has adopted it as his business only within a short period, and has now in his employ, several excellent workmen,) is an experienced hunter, and his experience frequently pointed out to him, the necessity of an improvement in the common Rifle, in order to be more successful after game; consequently, this laid the foundation of the improvement, or invention of the gun of which we are now about to speak. This Rifle, in the neighbourhood of the inventor, is designated by the name of the "Seven Shot Rifle," and differs from the ordinary gun, by having a revolving breech, capable of containing seven distinct charges, and which by touching a small spring, revolves successively as the gun is discharged, until the whole are fired off.

As each chamber in the breech is of the exact bore of the calibre of the gun, and is brought in the revolution with

a direct line of the barrel, it can be discharged with astonishing rapidity, and with the same precision and effect as the most perfect among the ordinary Rifles.

As I felt much interest in this newly invented gun, the proprietor took some pains to test its correctness and utility on several occasions, in my presence, and the result was of the most satisfactory kind, and which I firmly believe, will in a great measure supplant the common gun, especially for the purposes of war, and hunting large game. The demand, however, for the present, is greater than the means of supply, but as the manufacturer has it in contemplation to enlarge his establishment, he will be able to supply any orders which may be sent to him.

The price varies from 45 to 100 dollars each; as however, a more perfect account of it is contained in his "patent," I have selected that part of it, on which his right is founded, that alone differing from the common Rifle.

"The fundamental principles, or what may be termed the basis of this machine, and that which constitutes the skeleton and main support of this invention, is a circular piece about five eighths of an inch thick, with an axle made of one solid piece; on this axle a cylindrical magazine is made to revolve, and is closely fitted to the face of this circular piece, this circular piece forms a cap to the magazine; in the face of this cap there is a recess of sufficient depth to admit a piece of deer skin or spunge, which serves to lubricate the joint with oil, which is kept close to an air tight joint, by a strong nut and screw, on the hinder end of the axle. There is an elongation of this axle, which passes into the breech and is fastened by a screw pin passing through it, into the lower part of the break off piece; this break off piece extends over the magazine on top, about a half inch wide, and one sixteenth of an inch thick, and terminating in a crotch, and is let into the edge of the cap or flange, which projects in form of a fillet beyond the magazine, and is fastened by two screws; this piece gives additional strength and stability to the breech. Between the centre and the periphery of this cap or flange, the main barrel is inserted so as to form a line with the top of the magazine, and corresponds with the calibre of the magazine in its operations, this operation is adjusted by a spring and catch fixed in the lower edge of the cap and juts into gains cut in the edge of the magazine, and is easily relieved by the finger, while the revolving chambers turn backward or forward at pleasure. This magazine contains seven distinct chambers of sufficient depth for a full charge, independent of each other. The loading of these may be performed through the main barrel or through the cap, as fancy dictates. These seven chambers, when loaded and primed, may be discharged distinctly in twenty seconds. In the arrangement of this gun, there is safety and certainty in its operations.

"The lock adapted to this kind of fire arms, is of the percussion kind, and where the percussion pin strikes the magazine, the fuse hole is drilled a little obliquely so as to meet the calibre.

"The improvements relied on in this machine, consists in the simplicity of its construction, and every way adapted to hunting and war purposes." J. D.

DICK LINGER'S ATTEMPT AT A STEEPLE CHASE.

My schoolfellow, Dick Linger, was never ready for any thing but his dinner: I say *his* dinner, for he was always too late for every body's else. He was a loiterer from his very birth, for he came sauntering into the world on the day on which his youngest brother had completed his fifteenth year. He was, of course, his mother's pet and his father's darling, and, by consequence, the plague of the whole house. At school he obtained the *soubriquet* of Dilatory Dick: he was last up in the morning, and, at night, every boy in his room was in bed, and the candle put out, before Dick had divested himself of half his clothes; and many a time has he awakened his bed-fellow from his first sleep by driving his toe into his eye, or doing him in the dark, as the law hath it, some other grievous bodily harm. At cricket he was usually bowled out by the second or third ball, for he never struck at it till it had passed him; and, when it was his turn to look out, he walked after it as if he had been following a funeral or going to be whipped. Nay, he was behind-hand even in mischief; for, if any expedition against a neighbouring orchard was undertaken, Dick usually contrived to arrive just in time to be seized by the proprietor and handed over to condign punishment, while his companions ran off with the booty. From his procrastinating habits, as well as from the circumstance of his being so frequently flogged for the delinquencies of others, he was facetiously termed the *tail* of the school. On one occasion, I remember, on which he had contrived to introduce himself to the mill-pond, he remained such a tediously long time under water, that, if one of his comrades had not gone down after him, I verily believe he would never have come up at all.

He would, doubtless, have been a scholar of no mean acquirements had he remained a sufficient time at his studies; but happening to be taken from school at eighteen, the poor fellow had no chance. I remember that, although we started in the classics together, and I was no fire-eater, I was construing Horace while he was wearing out his second Corderius, and conjugating "amo" with infinitely more complacency than success. His attempts at conjugation in

after-life were equally unfortunate, since he lost an opportunity of getting a rich wife, because, although he made three several attempts on as many days, he could never manage to get to church within canonical hours.

Luckily, however, for Richard, as he was the last of his family in coming into the world, he contrived to be the last to go out of it, and consequently succeeded to the property of those of his brothers and sisters who had not resorted to matrimony as a mode of relieving the monotony of life; and thus it happened, that, while he was deliberating upon which of the professions he should adorn, he was saved the trouble of farther debate by being placed in easy circumstances for life. Never was any man more rejoiced at being left to follow the bent of his own inclination; which, however, he did as he performed every thing else, quite at his leisure. He was fond of hunting, and subscribed to a pack of excellent fox-hounds, but he could never contrive to be at the place of meeting in time to see them throw off; so that, after an hour's hard riding, he usually met them on their return to kennel.

In a moment of extraordinary excitement, Richard was induced to ride a steeple chase—not for the sake of the wager, for he would not have ridden a third of the distance for thrice the money, but simply for the gratification of the whim of the moment. The idea of Dick's riding a race of any kind was so utterly preposterous that it attracted the attention of the whole country, and innumerable were the bets to which it gave rise; since, although there were many who were ready to lay upon the acknowledged excellence of Richard's horse, there were quite as many who would have staked their fortunes upon the dilatoriness of the rider; and among the latter were his two opponents, who it was suspected had engaged to share the profit or loss of the adventure. They had cunningly covenanted that they should start at a particular hour, and that they should not wait for each other's arrival. The event justified their prudence in making this proviso, for Richard appeared at the starting-post just two minutes after his antagonists had quitted it, puffing away, not from want of breath, but by reason of a cigar. "Good morning to you, Gentlemen," said Richard to a host of persons who had gathered about the spot, as he quietly dismounted and began to tighten his saddle-girths, while his horse, deeming them tight enough before, showed its sense of Dick's officiousness by a smart bite, which, if it had included cuticle as well as broad-cloth, might have materially interfered with the comfort of his ride.

"Make haste, my good fellow, or you'll lose the race," exclaimed a by-stander, who, having staked a round sum upon Richard's horse, was almost frantic at beholding the owner's imperturbable deliberation.

"Wait while I light another cigar," responded Dick, igniting a piece of German tinder, which he began to blow with great energy, and looking upon the anxious faces around him with the greatest complacency imaginable. When, however, he got into the saddle, he appeared determined on making up for lost time, and set off in good earnest. He was an excellent horseman, and a bold one; but two minutes in a race, like an inch in a man's nose, are no trifle. His horse, though, was a regular fencer; and, in the course of the next five minutes, cleared three quickset hedges, a market woman, and a gipsy's donkey, and Dick was evidently gaining ground upon his precursors. But he was destined never to be before-hand in anything. There stood the steeple, within half-a-mile of him, and, midway between, a rising ground which his rivals were just mounting, and soon disappeared behind it. Dick put spurs to his horse, and arrived on the summit of the hillock just in time to catch a glimpse of the foremost equestrian, who was showing him a "clean pair of heels," the only visible part of him; and they, as in duty bound, were following his head and shoulders to the bottom of a deep and rapid river, of which the party in advance either were previously ignorant, or, like others who have taken the shadow for the substance, were mis-led by the reflection of the desired steeple in the water, and determined to arrive at the gaol *per saltum*. While Richard, who was somewhat slow in comprehending matters, was wondering at the extraordinary feat, his eye glanced towards his other antagonist, who was practically explaining to him the mode in which it had been accomplished, by sliding over the nose of his horse in the same antipodean fashion. Dick, however, who had already suffered from his proximity to his horse's nose, pursued an opposite course, and pulling the animal up—that is, perpendicularly upon his hind legs—he slid over its tail, after his old habits of being always behind, and thus regained *terra firma*.

Richard, who was a good-natured fellow, and had no notion of his opponents stopping short in the church-yard on their way to the steeple, hastily tied his horse to a tree, and proceeded to angle for them with the thong of his hunting-whip: but not succeeding in getting a bite, he tried the hook at the butt-end, and, at length fished them both out. Their horses had taken care of themselves, and were quietly grazing in a meadow on the opposite bank. Dick, like a good fellow as he was, stuck both his friends upon the back of his own nag, and led them to the nearest inn, where he left them with thirteen blankets on the outside of their bodies, and two stiff glasses of brandy and water within. Our hero, having previously fortified himself with a beef-steak and a tankard of home-brewed, walked over the rest

of the course, at his leisure, in the cool of the evening, infinitely less gratified at winning his wager, than at the power he possessed of quoting one instance at least of the advantages of being behind-hand.

Lon. Sport. Mag.

PRESERVATION OF THE QUAIL OR PARTRIDGE.

We are exceedingly gratified at the interest that prevails, in various sections of our country, to preserve that interesting, half domesticated bird, the Partridge; persons who, heretofore, cared but little for these birds, seem now to take so deep a concern in their protection, as to induce us to believe that one year more will, in a great measure, repair the devastating effects of the past inclement winter.

We have heard, from well authenticated sources, that many farmers have concluded to entrap all the Partridges on their respective places, and keep them until next spring, then to be turned out again for propagation.

Some of the New York sportsmen, with a zeal, worthy of great commendation, are making arrangements, on an extensive scale, to purchase, and provide for during the present winter—*three thousand Partridges*—and as we understand have already contracted with persons for their delivery in New York, at so much per head. We would say to the Philadelphia sportsmen, and those of other places, "Go thou and do likewise."

Several meetings of the sportsmen in Philadelphia have been called for this purpose, but as yet nothing definite has been done; and only a few evenings since, a call was made, by different individuals, to sportsmen, to meet at *two* places, the consequence was, nothing was done, and the good intentions of those who first made the call, were completely frustrated, by dividing the attention of sportsmen between the two places.

Meetings have been called in various parts of the county, solely for the purpose of endeavouring to protect the remainder of this game from a recurrence of such disasters as prevailed amongst it last winter.

And it gives us much pleasure to insert the following notice, which has been freely circulated in most of our city papers.

NOTICE TO SPORTSMEN.

At a meeting of the inhabitants of Oxford and Lower Dublin Township, held at Sandy Hill, on Monday evening, the 7th inst., Mr. Daniel Walton was called to the chair, and Jacob Snyder appointed secretary. The following resolutions were submitted by Mr. Samuel Cornell, which, after a brief discussion, were unanimously adopted.

Resolved, That in the opinion of this meeting, there are at present no more Partridges in this neighbourhood than are necessary for procreation.

Resolved, That we will neither shoot, ensnare, or in any manner kill any Partridges during the present season, and that we will use all proper means for their protection during the approaching winter.

Resolved, That we will rigidly enforce the law against every person who may be guilty of shooting any Partridges on our property this season.

Resolved, That the proceedings of this meeting be signed by the Chairman and Secretary, and published.

DANIEL WALTON, *Chairman.*

JACOB SNYDER, *Secretary.*

Nov. 18, 1831.

THE MATCH FOR $10,000.

NORFOLK, Nov. 3.—The race of yesterday, over Garrison's course, attracted a fine company, from the fame of the horses announced to take part in the contest. Only three of the horses mentioned by us entered at the stand, Annette, Bayard, and Chanticleer. The weather was remarkably fine, and the course in pretty order, and the betting, extra of the purse, is believed to have equalled $10,000.

The following is the result, giving the purse to Col. Johnson's Annette:

Mr. Johnson's Annette,	1	1
Mr. White's Bayard,	2	2
Mr. Wilson's Chanticleer,	3	3

Time—1st heat 3m. 47½s.—2d heat 3m. 50s.

THE MATCH RACE FOR $4,000.

Nov. 4.—The Match Race for a purse of $4,000 was run yesterday over Garrison's course. The contest was between Mr. Doswell's b. m. Sally Hornet, 5 years old, and Mr. Wm. Wilson's bl. m. Bonny Black. Sally Hornet proved more than a match for her competitor, and bore off the purse.

The following is the award:

Mr. Doswell's Sally Hornet,	1	1
Mr. Wilson's Bonny Black,	2	2

Time—1st heat 7m. 55s.—2d heat 8m. 13s.

PL. 23.

From Nature and on Stone by T. Doughty.

GREAT TAILED SQUIRREL.

Lon Childs & Inmans P. 1[illegible]

GREAT TAILED SQUIRREL.

SCIURUS MACROURUS.

Sciurus macrourus, Say. *non* Gmelin, *S. magnicaudatus*, Harlan. *Griffith, An. king. S. macroureus*, Godman. *Am. Nat. Hist.* Philadelphia Museum.

The Squirrels belong to the great order Glires or Gnawers, and are distinguished, by their very compressed lower incisors, and their long tail furnished with hair. They have four toes on the anterior feet, and five on the posterior. Sometimes the thumb of the fore feet is marked by a tubercle. Their head is large, and their eyes prominent and brilliant. The genus Sciurus, of Linnæus, comprehends many which have been considered, by modern Zoologists, as possessing sufficient characters to be formed into other genera. These are Tamias Illiger, including the Ground Squirrels, or those having cheek pouches; Pteromys, Cuvier, comprehending the Flying Squirrels, and Cheiromys, Cuvier, of which there is but one species distinguished by having much more compressed incisors, and five toes on each of the feet, of which four of those on the anterior extremities are exceeding long.

The true or tree Squirrels, are distinguished by the absence of the lateral folds of skin which are found in the Flying Squirrels, and the cheek pouches which characterise the Tamias. In most of them, the tail is distichous, that is, the hairs diverge on either side from a longitudinal medial line. They are found in every part of the world in great numbers, with the exception of New Holland.

Few animals are to be compared to the Squirrels for beauty, and lightness of form, and grace and agility of movements. Living on the loftiest trees, they bound from limb to limb, with a rapidity that almost resembles flying. Few animals also, especially among the smaller classes, become so readily tamed, and submit with such apparent contentment, to the loss of liberty, and a confinement so widely different from their natural habits.

The true Squirrels of North America are by no means as large, nor is the colour of their fur as rich as those species inhabiting the eastern parts of Asia; with a few exceptions they are of an ash grey colour of various shades, and the specific peculiarities and markings by which they are distinguished, are so slight, that it is a task of no little difficulty to ascertain the number of species inhabiting our forests.

The subject of our present plate was first described by Mr. Say, in "Long's Expedition to the Rocky Mountains," from specimens found on the Missouri, where it is the most common species. This gentleman described it under the name of *macrourus*, without perhaps being aware that this appellation had already been given by Gmelin to the Ceylon Squirrel; from this latter circumstance Dr. Harlan changed the name to that of *magnicaudatus*, and Dr. Godman *macroureus;* as, however, Cuvier states that the Ceylon Squirrel is identical with the great Indian Squirrel, *S. maximus*, Mr. Say's original name can still be retained for this species.

We know little or nothing, of the habits or manners of the Great Tailed Squirrel, though in all probability they are analogous to those of the other American species. The following description is drawn up from that of Mr. Say, as originally given:

The upper part of the body and sides are of an ash grey colour mixed with black; the hairs are black at base, then pale cinnamon, then black and finally ash gray, with a long black tip. The ears, which are about three quarters of an inch in length, are of a bright ferruginous colour behind, this colour extends to the base of the hair, which, during the winter, projects beyond the edge of the ear; on the inside, the fur is of a dull ferruginous hue, slightly tipped with black. The sides of the head, as well as the orbits of the eyes, are pale ferruginous; and beneath the ears and eyes the cheeks are dusky. The whiskers are disposed in five series of slightly flattened hairs, the four lower series more distinct. The mouth is surrounded with black, and the teeth are of a reddish yellow colour. The under part of the head and neck as well as the upper surface of the feet, are ferruginous; the belly is paler, approaching to a dusky white, the fur being led colour at base.

The tail is of a bright ferruginous colour beneath, the colour extending to the base of the fur, with a submarginal black line. The upper part of the tail is a mixture of ferruginous and black, the fur within is of a pale cinnamon colour with the base and three bands black, the tip being ferruginous. The palms of the anterior feet are black, and the tubercular thumb is furnished with a broad flat nail.

When the animal is in its summer dress, the fur on the back is from three-fifths to seven-tenths of an inch in length; whilst in the winter coat, the longest hairs on the middle of the back are from one to one inch and three quarters long, the colours, however, do not vary. From this difference in the length of the fur, and the greater proportion of fat, the animal appears shorter and thicker than in summer.

The total length of this species, from the tip of the nose to the end of the tail, exclusive of the hair, is nineteen inches and three quarters, of which the tail makes nine inches and a tenth. The tail is much larger and finer than in the common Grey Squirrel, (*S. cinereus.*)

Mr. Say observes, "This species was not an unfrequent article of food at our frugal yet social meals at Engineer Cantonment, and we could always immediately distinguish

the bones from those of other animals by their remarkable red colour."

This species does not appear to inhabit as far north as the regions visited by Dr. Richardson, as that gentleman does not mention it in his work: in all probability it is to be found much further east than the Missouri, and been mistaken for a large specimen of the common Grey Squirrel, with which it would be readily confounded by a casual observer.

ANECDOTES OF THE SHEPHERD'S DOG.

By Mr. Hogg.

There is no species of animals so varied in their natures and propensities as the shepherd's dog, and these propensities are preserved inviolate in the same breed from generation to generation. One kind will manage sheep about hand, about a bught, shedding, or fold, almost naturally; and those that excel most in this kind of service, are always the least tractable at a distance; others will gather sheep from the hills, or turn them this way as they are commanded, as far as they can hear their master's voice, or note the signals made by his hand, and yet can never be taught to command sheep close around him. Some excel again in a kind of social intercourse. They understand all that is said to them, or of them, in the family; and often a good deal that is said of sheep, and of other dogs, their comrades. One kind will bite the legs of cattle, and no species of correction or disapprobation will restrain them, or ever make them give it up; another kind bays at the head of cattle, and neither precept nor example will ever induce them to attack a beast behind, or bite its legs.

My uncle Hoy's kind were held in estimation over the whole country for their docility in gathering sheep at a distance, but they were never very good at commanding sheep about hand. Often have I stood with astonishment at seeing him standing on the top of one hill, and *the Tub*, as he called an excellent snow-white bitch that he had, gathering all the sheep from another with great care and caution. I once saw her gathering the head of a hope, or glen, quite out of her master's sight, while all that she heard of him was now and then the echo of his voice or whistle from another hill, yet, from the direction of that echo, she gathered the sheep with perfect acuteness and punctuality.

I have often heard him tell another anecdote of Nimble; that one drifty day in *the seventy-four*, after gathering the ewes of Chapel-hope, he found that he wanted about an hundred of them. He again betook him to the heights, and sought for them the whole day without being able to find them, and began to suspect that they were covered over with snow in some ravine. Towards the evening it cleared up a little, and as a last resource, he sent away Nimble. She had found the scent of them on the hill while her master was looking for them; but not having received orders to bring them, she had not the means of communicating the knowledge she possessed. But as soon as John gave her the gathering word, she went away, he said, like an arrow out of a bow, and in less than five minutes he beheld her at about a mile's distance, bringing them round a hill, called *The Middle*, cocking her tail behind them, and apparently very happy at having got the opportunity of terminating her master's disquietude with so much ease.

I once witnessed another very singular feat performed by a dog belonging to John Graham, late tenant in Ashiesteel. A neighbour came to his house after it was dark, and told him that he had lost a sheep on his farm, and that if he (Graham) did not secure her in the morning early, she would be lost, as he had brought her far. John said, he could not possibly get to the hill next morning, but if he would take him to the very spot where he lost the sheep, perhaps his dog Chieftain would find her that night. On that they went away with all expedition, lest the traces of the feet should cool; and I, then a boy, being in the house, went with them. The night was pitch dark, which had been the cause of the man losing his ewe; and at length he pointed out a place to John, by the side of the water, where he had lost her. "Chieftain, fetch that," said John, "bring her back, sir." The dog jumped around and around, and reared himself up on end, but not being able to see any thing, evidently misapprehended his master; on which John fell a cursing and swearing at the dog, calling him a great many blackguard names. He at last told the man, that he must point out the *very track* that the sheep went, otherwise he had no chance of recovering it. The man led him to a grey stone, and said, he was sure she took the brae within a yard of that. "Chieftain, come hither to my foot, you great numb'd whelp," said John. Chieftain came. John pointed with his finger to the ground, "Fetch that, I say, sir, you stupid idiot—bring that back away." The dog scented slowly about on the ground for some seconds, but soon began to mend his pace, and vanished in the darkness. "Bring her back away, you great calf," vociferated John, with a voice of exultation, as the dog broke to the hill; and as all these good dogs perform their work in perfect silence, we neither saw nor heard any more for a long time. I think, if I remember right, we waited there about half an hour; during which time, all the conversation was about the small chance that the dog had to find the ewe, for

it was agreed on all hands, that she must long ago have mixed with the rest of the sheep on the farm. How that was, no man will ever be able to decide. John, however, still persisted in waiting until his dog came back, either with the ewe or without her; and at last the trusty animal brought the individual lost sheep to our very feet, which the man took on his back, and went on his way rejoicing. I remember the dog was very warm, and hanging out his tongue—John called him all the ill names he could invent, which the other seemed to take in very good part. Such language seemed to be John's flattery to his dog. For my part, I went home fancying I had seen a miracle, little weeting that it was nothing to what I myself was to experience in the course of my pastoral life, from the sagacity of that faithful animal the shepherd's dog.

My dog was always my companion. I conversed with him the whole day—I shared every meal with him, and my plaid in the time of a shower; the consequence was, that I generally had the best dogs in all the country. The first remarkable one that I had was named Sirrah, he was beyond all comparison the best dog I ever saw. He was of a surly unsocial temper—disdained all flattery, and refused to be caressed; but his attention to his master's commands and interests never will again be equalled by any of the canine race. The first time that I saw him, a drover was leading him in a rope; he was hungry, and lean, and far from being a beautiful cur, for he was all over black, and had a grim face striped with dark brown. The man had bought him of a boy for three shillings, somewhere on the Border, and doubtless had used him very ill on his journey. I thought I discovered a sort of sullen intelligence in his face, notwithstanding his dejected and forlorn situation, so I gave the drover a guinea for him, and appropriated the captive to myself. I believe there never was a guinea so well laid out; at least, I am satisfied that I never laid out one to so good purpose. He was scarcely then a year old, and knew so little of herding, that he had never turned sheep in his life; but as soon as he discovered that it was his duty to do so, and that it obliged me, I can never forget with what anxiety and eagerness he learned his different evolutions. He would try every way deliberately, till he found out what I wanted him to do; and when once I made him to understand a direction, he never forgot or mistook it again. Well as I knew him, he very often astonished me, for when hard pressed in accomplishing the task that he was put to, he had expedients of the moment that bespoke a great share of the reasoning faculty. Were I to relate all his exploits, it would require a volume; I shall only mention one or two, to prove to you what kind of an animal he was.

I was a shepherd for ten years on the same farm, where I had always about 700 lambs put under my charge at weaning time. As they were of the *short*, or *black-faced* breed, the breaking of them was a very ticklish and difficult task. I was obliged to watch them night and day for the first four days, during which time I had always a person to assist me. It happened one year, that just about midnight the lambs broke and came up the moor upon us, making a noise with their running louder than thunder. We got up, and waved our plaids, and shouted, in hopes to turn them, but we only made matters worse, for in a moment they were all round us, and by our exertions we cut them into three divisions; one of these run north, another south, and those that came up between us straight up the moor to the westward. I called out, "Sirrah, my man, they're a' away;" the word, of all others, that set him most upon the alert, but owing to the darkness of the night, and blackness of the moor, I never saw him at all. As the division of the lambs that ran southward were going straight towards the fold, where they had been that day taken from their dams, I was afraid they would go there, and again mix with them; so I threw off part of my clothes, and pursued them, and by great personal exertion, and the help of another old dog that I had beside Sirrah, I turned them, but in a few minutes afterward lost them altogether. I ran here and there, not knowing what to do, but always, at intervals, gave a loud whistle to Sirrah, to let him know that I was depending on him. By that whistling, the lad who was assisting found me out, but he likewise had lost all traces of the lambs whatsoever. I asked if he had never seen Sirrah? He said, he had not; but that after I left him, a wing of the lambs had come round him with a swirl, and that he supposed Sirrah had then given them a turn, though he could not see him for the darkness. We both concluded, that whatever way the lambs ran at first, they would finally land at the fold where they left their mothers, and without delay we bent our course towards that; but when we came there, we found nothing of them, nor was there any kind of bleating to be heard, and discovered with vexation that we had come on a wrong track.

My companion then bent his course towards the farm of Glen on the north, and I ran away westward for several miles, along the wild track where the lambs had grazed while following their dams. We met after it was day, far up in a place called the Black Cleuch, but neither of us had been able to discover our lambs, or any traces of them. It was the most extraordinary circumstance that had ever occurred in the annals of the pastoral life! We had nothing for it but to return to our master, and inform him that we had lost his whole flock of lambs to him, and knew not what was become of them.

On our way home, however, we discovered a body of lambs at the bottom of a deep ravine, called the Flesh Cleuch,

and the indefatigable Sirrah standing in front of them, looking all around for some relief, but still standing true to his charge. The sun was then up; and when we first came in view of them, we concluded that it was one of the divisions of the lambs, which Sirrah had been unable to manage until he came to that commanding situation, for it was about a mile and a half distant from the place where they first broke and scattered. But what was our astonishment, when we discovered by degrees that not one lamb of the whole flock was wanting! How he had got all the divisions collected in the dark is beyond my comprehension. The charge was left entirely to himself from midnight until the rising of the sun; and if all the shepherds in the forest had been there to have assisted him, they could not have effected it with greater propriety. All that I can say farther is, that I never felt so grateful to any creature below the sun as I did to my honest Sirrah that morning.—*London Sport. Magazine.*

ON THE LUXURY OF THE ROMANS.

The Roman writers who flourished during the republic say little about Natural History. It is more treated of by the writers under the Empire. But the works they have left us on such subjects contain few original remarks, and are little else than compilations, a circumstance which must appear very strange, since no nation had ever greater opportunities of observing.

In the earliest ages of the republic, besides that the Roman institutions were in general adverse to every kind of study, the simplicity of manners that prevailed was especially unfavourable to the progress of natural history, a science of luxury, expensive, and not to be carried on without many previous arrangements.

Indeed the relations among the beings that form the subject of natural history, cannot be established without bringing together a great number. Much assistance is therefore derived from commerce, drawing, as it does, towards a central point, the productions of foreign countries. Now, the Romans, during a very long period were not commercial. By the first treaty made with the Carthaginians, they bound themselves not to sail beyond the strait that separates Sicily from Africa. Still later, in the year of Rome 405, they gave up altogether their trade with Sardinia, and with the coast of Africa.

Commerce was checked, not through ignorance, but from the policy of their government, in order to withstand the introduction of luxury. Rome had no silver money till the 472d year from the foundation of the city, 268 years before Christ. At the date of the late Macedonian War, a senator was degraded from his rank for having ten pounds of silver plate. Gold plate was seen for the first time at the end of this war, in the triumph of Paulus Æmilius. But luxury was the speedy consequence of victory, and the luxury of individuals was carried to the utmost extravagance. We shall notice it in so far as regards natural history.

The luxury of the table, for example, caused to be imported into Rome from foreign countries a multitude of animals; of which several had no other recommendation but rarity, and being excessively dear.

The luxury of dress also is interesting, with respect to precious stones and dyes. That of buildings, on account of the marbles brought from different parts of Italy, from Greece, and even from Gaul. And the luxury of furniture is interesting, from the valuable woods employed.

Of the Luxury of the Table.

Quadrupeds.—During the second Punic War, Fulvius Hirpinus devised the mode of retaining quadrupeds in parks. These parks were named *Leporaria*, because three sorts of hares were reared in them, the common hare, the original Spanish rabbit, and the variegated or alpine hare, a species now almost entirely destroyed. In like manner, nearly all the native animals of our forests were bred in these parks, besides the wild sheep and the mouflon. These animals were almost domesticated, and were taught to unite at a signal. One day, when Hortensius was entertaining his friends at dinner in one of his parks, at the sound of a trumpet, stags, goats, and wild boars were seen running up, and gathered round his tent, to the no small dismay of some of the guests. Servius Rullus was the first who had a whole boar served on his table. Anthony, during his triumvirate, displayed eight at one feast. The Romans considered as a great delicacy the grey dormouse, a little animal that dwells in the woods, and in the holes of oak trees. They reared them in enclosures, and lodged them in jars of earthen-ware, of a particular form, fattening them with worms and chesnuts.

Birds.—Lenius Strabo of Brundusium invented aviaries for confining such birds, destined for the table, as could not be kept within the walls of a poultry-yard. It is he, says Pliny, that taught us to imprison animals whose abode is the sky. Alexander had introduced peacocks into Greece, where they were regarded only as objects of curiosity. Hortensius was the first who had one served at a banquet, when he was appointed to the office of augur.

These birds soon multiplied, and Ptolemy Phocion was astonished at the great number of them to be found in Rome. Aufidius Lucro made about £600 a-year by fattening pea-

cocks. The peacock was a constant dish at all the great entertainments. It was the truffled turkey of those days.

Hirtius Pansa, who had the ill luck to give a feast where this indispensable article did not appear, was reckoned a niggard, a man without taste, and was ever after scorned by delicate feeders. In those aviaries thrushes and pigeons were bred. It seems, too, there were then the same fancies as there are at present. Certain varieties were much sought after. Varro relates that a couple of pigeons brought 2000 sesterces, about 19*l.* of our money. Sempronius Lucius first had served on his table young storks. Geese were crammed in the same manner as now to enlarge their livers; but it was a dish too easily obtained, and soon those who wished to distinguish themselves invented new sorts of meat. They dressed the brains of ostriches, and the tongues of flamingos. Wild geese were sent for from Phrygia; cranes from Melos; and pheasants from Colchis.

Fishes.—As to fish, luxury went even farther than in birds and quadrupeds. At one period of the republic, a man eating a fish would have been thought shamefully dainty. But the severity of manners disappeared on the introduction of riches; and Cato complains, that in his time, a fish sold as dear as an ox. Yet, even then, Gallonius was publicly accused in the senate, and was nearly deprived of his rank, on account of the luxury of his table, having had sturgeons on it. The inventor of fish-ponds was Lucinius *Muræna*, and thence came the surname which was afterwards borne by this family.

Hortensius followed his example, and even went beyond it. Very soon, it was not enough to have fresh-water fish, for salt-water ponds were formed, in which were bred seatrouts, soles, John Dories, and shell-fish of different kinds. Lucullus, in order to let in sea-water to one of his preserves, had a mountain cut through, and from this extravagance was deservedly called *Xerxes Togatus*. At his death there were so many fish in his ponds, that Cato of Utica, who was trustee on the succession, having ordered them to be sold, received for them the sum of 32,000*l.* sterling. The sale of the fish-ponds of Irrius yielded the same price. Cæsar wishing, on a particular occasion, to give a feast to the Roman people, applied to this Irrius for some lampreys. Irrius refused to sell any, but, according to Pliny, agreed to lend him six thousand. Varro says only two thousand. The object then was, who could be most absurd about lampreys. Hortensius had some of which he was more careful than of his slaves, and not for the purpose of eating them. Those served on his table were bought in the market. He is said to have wept on the death of one of these fish. Crassus, the orator, in a like case, went farther,—he put on mourning. His colleague Domitius chid him for it in the senate; but all this was nothing compared to the deeds of Claudius Pollio. He more than once threw in living men to be devoured by his lampreys.

Other fish were equally the object of prodigality of which we can hardly form a conception. The *accipenser* was generally sold for more than a thousand drachmæ. It was never set on the table without a flourish of trumpets. The *accipenser* was not, as it would seem, the ordinary sturgeon, but the sterlet, a small species with a pointed snout, caught in the rivers that fall into the Black Sea. The mullet, or roach of Provence, called in Paris the *sun-mullet*, was also sold excessively dear. A mullet weighing four lbs. fetched £37; another £62. Three together, in the reign of Tiberius, were sold so high as £250. These fish used even to be brought alive to the dining-room, by canals filled with salt-water which passed under the table. The fact is undoubted, and is attested by the invectives of Seneca.

Snails and Oysters.—Singular attention was likewise paid to snails. The same Fulvius Hirpinus, who had thought of parks for quadrupeds, contrived parks for them too. As snails could not be retained by inclosures, the places in which they were kept were surrounded with water. Jars of earthen-ware were set for them to retire into, and they were fattened with mulled wine and flour. Pliny says there were some of the weight of 25 lbs. Those that grew to this size were certainly not Italian snails. But we know that snails were likewise brought from foreign countries, as Africa and Illyria.

The man who first showed the way of making oyster-beds was Sergius Aurata. He, like Lucinius, derived his surname from a fish, the John Dory. The preserver of the Lucrine Lake had for a long time the character of producing the best oysters. Next to them were those of Brundusium. At last refinement was carried farther; and the oysters of Brundusium were taken to be parked in the Lucrine Lake.

Fruits.—It appears that fruits were less sought after then than they have been since. The only new fruit introduced at this time was the cherry, which Lucullus brought from Cerasus, a town in Asia Minor, sixty-nine years before Christ.

Perfumes and Dress.—The luxury in *perfumes* was beyond measure, and drew to Rome the most costly aromatics of the East. The luxury of *dress* was equally great, and made known purple, pearls, and precious stones. At one time there was quite a rage for opals; and one individual, rather let himself be prosecuted, than give up to Sylla a very fine one the dictator desired to have.

Furniture.—The dominion of fashion extended equally to *furniture*, and raised the value of certain kinds of wood to an enormous amount. For a while the *citrus* was preferred. The tree thus named was not the citrus of Theo-

phrastus, the orange-tree of our time; but seems to have been a species of Thuya, brought from Cyrenaica. They made use not only of the trunk but of some knots that grew out near the root. When such pieces could be got of a large size, they were sold excessively dear. Cethegus paid for a table 1,400,000 sesterces, about £11,000. Even Seneca, with all his outcry against luxury, had some tables that cost a most exorbitant sum. These pieces were distinguished by their colour, and by the way they were veined. Each variety had a different name. Ebony also was employed, a kind of wood first introduced into Italy by Pompey, after his victories over the pirates.

Building.—A great deal of marble was used in building. It was brought from the most distant countries, and there were even several of which the quarries are now lost. Thus the marbles denoted by the names of *vert antique* and *rouge antique*, are so termed because they are found only in ancient structures. It was in searching for such fragments among some ruins that Pompeii was discovered.

Luxury of the Empire.—If from the luxury of individuals we turn to the luxury displayed in public festivals, we find still greater matter of astonishment. One would hardly venture to repeat what is stated in ancient writers, yet there appears no ground for supposing that they exaggerated, seeing how closely their accounts agree; when we reflect, too, that they were nearly all eye-witnesses of what they relate, and that they would not have attempted to bring forward assertions opposed to the knowledge of all their contemporaries. Messrs. Beckman, Mongez, and Cuvier, have made very extensive inquiries about the animals exhibited or slain in the circus. Such inquiries ought not to be regarded as merely curious. In fact, it is of importance to the naturalist, and for several reasons, to know the date of the first appearance of these animals, the countries of which they were natives, and their numbers. For example, without ascertaining these points, a naturalist would often be apt to mistake the bones of foreign quadrupeds for true fossil remains, and thus to mistake transported soil for regular formations.

Curius Dentatus first showed foreign animals at Rome in the year 273 before Christ. It will be recollected, that elephants were first brought to Greece during the conquests of Alexander. Aristotle saw them, and wrote about them a great deal better than Buffon has since done. These elephants, and some others sent afterwards, came into the possession of Pyrrhus, king of Epirus, who had taken them from Demetrius Poliorcetes. Pyrrhus having been himself defeated by the Romans, four of his war-elephants fell into the power of the conquerors. These elephants, after having been led in the triumphal possession of Curius, were slain before the people. Four-and-twenty years later, Metellus having gained a great victory over the Carthaginians, captured a hundred and forty-two elephants, which were all slain with arrows in the circus. It was evidently good policy, in the time of Curius Dentatus, to put to death some of these animals, in order to lessen the fear the sight of them had at first produced. There were not the same reasons for the second massacre; but, without doubt, the Romans had no desire to introduce elephants into their armies, and thus oblige themselves to alter tactics of which they had proved the excellence. As little were they inclined to make a present of these elephants to any of the kings their allies, from an apprehension of adding too much to their force. Sixty-six years after the triumph of Metellus, in the year before Christ 186, Marcus Fulvius, to absolve himself from a vow he had made in the Ætolian war, exhibited panthers and lions. These animals might have come from Africa; but perhaps he had obtained them from Asia Minor, where, at this time, some were still to be found. The people getting a taste for these shows, Scipio Nasica and Publius Lentulus gave them a sight of several elephants, forty bears, and fifty-three panthers. Quintus Scævola had several lions fighting against men. Sylla had more than an hundred male lions. In the year 58 before Christ, Æmilius Scaurus, during his ædilship, distinguished himself not only by the number of animals he brought out, but also by presenting several that had never before been seen in Rome. In these spectacles the first hippopotamus appeared. There were also five live crocodiles, five hundred panthers, and, more strange still, the bones of the animal to which, it was said, Andromeda had been exposed. These bones had been brought from the town of Joppa (Jaffa), on the coast of Palestine. There were among them vertebræ a foot and a half long, and a bone not under six-and-thirty feet in length, probably the under jaw of a whale. In the year 55 before Christ, Pompey at the inauguration of his theatre, displayed a lynx, a cephus from Æthiopia (a species of ape), a one-horned rhinoceros, twenty elephants fighting with men, four hundred and ten panthers, and six hundred lions, whereof three hundred and fifteen had manes. All the sovereigns of Europe together could not now produce such a number. Cicero, who was present at these games, speaks of them with great disdain, and says the people at last took pity on the elephants. In the 48th year before Christ, Anthony exhibited lions harnessed to a chariot; it was the first time these animals had been seen so employed, but they were not the first that had been tamed. A Carthaginian, named Hanno, had a lion that followed him through that city like a dog. His trouble was ill rewarded, for his countrymen banished him, judging that a man who had been able to subdue a ferocious beast, must have been gifted with some secret power by which he might perhaps have overcome themselves.

In the year 46 before Christ, Cæsar put forth, in an amphitheatre covered over with a purple awning, four hundred maned lions, several wild bulls fighting with men, and twenty elephants which were attacked by five hundred infantry. On the evening of his triumph, he returned home preceded by elephants carrying torches.

We may imagine the unbounded opulence of the men who could afford such spectacles—the eagerness of allied kings to gratify them—the crowds of human beings employed in obtaining the animals exhibited to the people! It is not less astonishing that it was possible to collect such a multitude of large animals and beasts of prey.

Yet in this kind of munificence the great Romans of the republic were afterwards outdone by the emperors. From an inscription, in honour of Augustus, found at Ancyra, we learn, that this prince caused three thousand five hundred wild beasts to be slain before the people. On one occasion he had water brought into the circus of Flaminius, and showed thirty-six live crocodiles torn to pieces by other savage animals. Two hundred and sixty-eight lions were killed at this entertainment. There was besides a serpent fifty cubits long, a python from Africa, and a royal tiger confined in a cage, the first that had been seen in Rome. Augustus, before he became emperor, at his triumph over Cleopatra, had a reindeer and a hippopotamus slain in the circus. Germanicus, at his triumph over the Germans, brought out elephants that had been taught to dance. Caligula gave four hundred bears and four hundred panthers to be killed. Claudius, at the dedication of the Pantheon, displayed four live royal tigers. A mosaic pavement which has lasted till our time, represent these animals of their natural size. The same emperor having been informed that a whale was stranded in the harbour of Ostia, repaired thither, and engaged the monster with his galleys. The animal was probably a large species of dolphin, the *orca*. Galba showed an elephant that went up on a tight rope to the summit of the theatre, with a Roman horseman on his back. These elephants were instructed when they were young, for they were born in Rome. Ælian says so positively, in speaking of the elephants of Germanicus. Mr. Corse Scott has shown, in opposition to the opinion of Buffon, that elephants, by taking certain precautions, will breed in a state of domestication. But the fact was known in Italy from the time of Columella.

This lavish expenditure continued during the first four centuries of the Roman empire. Titus, at the dedication of his baths, placed in the circus nine thousand animals, and exhibited cranes fighting together. Domitian gave hunts by torch-light, where the two-horned rhinoceros appeared,—an animal with which Sparrman has made us acquainted only within the last sixty years, though it is engraved on the medals of Domitian. In these games a woman fought with a lion. An elephant, after having trampled to death a bull, went and knelt to the emperor; a royal tiger killed a lion; and wild cattle dragged chariots. Martial has occupied a whole book with the description of the games of Domitian. In his epigrams naturalists will find many curious hints.

Trajan, after his victory over Deceballus, king of Parthia, gave entertainments that lasted three-and-twenty days. According to Dio Cassius, eleven thousand animals perished at them. But the accounts of historians are much less interesting, than a mosaic, executed by order of that emperor. In this valuable fragment, which was discovered at Palestrina, the ancient Prænestе, the animals of Egypt and Ethiopia are figured with the names under each of them. The lower part represents the inundation of the Nile. The forms of the ibis, the crocodile, and the hippopotamus, are very exactly given. But the hippopotamus has been very ill described by the Roman naturalists, who have only copied from Herodotus. On the upper part of the mosaic there appear among the mountains of Ethiopia the giraffe, under the name of *nabis;* apes, and various reptiles; in all thirty animals, easily recognised, and whose nomenclature is thus determined.

Antoninus, the successor of Adrian, conforming to the established usage likewise exhibited games. He had crocodiles, hipopotamuses, strepsiceroses (antelopes), and hyænas, different from those described by Agatarchis.

Marcus Aurelius abhorred such spectacles, but his son Commodus resumed them with fury; with his own hand he slew a tiger, a hippopotamus, and an elephant. He sent into the circus a great number of ostriches, and as they ran about cut off their heads with crescent-shaped blades, fixed on the points of arrows. Herodian, who relates the fact, says, that the birds, after being decapitated ran about some time. The experiment has been successfully repeated on ducks. Septimus Severus, in the tenth year of his reign, at the rejoicings on the marriage of Caracalla, made four hundred animals come out of a machine, and among them some wild asses and bisons. At the marriage of Heliogabalus, there were chariots drawn by all kinds of wild beasts.

The most expensive and most curious assemblages of animals were those of the Gordians. The first emperor of this name in one day exposed to view a thousand panthers. Probus, one of their successors, had trees planted in the circus. More than a thousand ostriches, and a countless throng of various creatures were seen running about in this artificial forest.

So long as the Roman empire existed in the west, similar displays were continued. In spite of the prohibitions of Constantine, there were some even under Christian empe-

rors. Theodosius gave fights of animals in the circus; and Justinian himself exhited in the amphitheatre twenty lions and thirty panthers.

Such sights, repeated without interruption for more than four hundred years, must have afforded the Roman naturalists opportunities of making numerous observations on the forms, habits, and interior organization of foreign animals; yet science was little improved by their labours. It seems, that the animals being once killed, nobody derived any further benefit from their slaughter. The proof is, that all the writers of the first, second, and third centuries of the Christian era, who have treated of such animals, have borrowed every thing they have said about them from Greek authors who lived before the Roman conquest. Pliny himself is but a compiler.—*From a Lecture delivered by Baron Cuvier.—Edin. Phil. Jour.*

A PECULIARITY NOT HITHERTO DESCRIBED IN THE ANKLE OR HOCK-JOINT OF THE HORSE.

By Robert J. Graves, M.D., M.R.I.A.

Being engaged in the dissection of the horse, on examining the hock-joint, I found that any effort to flex or bend the limb at that joint, was counteracted by a considerable resistance, which continued until the limb was bent to a certain extent; after which, suddenly, and without the aid of any external force, it attained to its extreme degree of flexion. In attempting to restore the extended position of the limb, I found that a similar impediment existed to its extension, until the same point was passed, when the limb suddenly, as it were, snapped into its extreme degree of extension at this joint.

At first I conceived that this phenomenon depended on the tendons of the flexor and extensor muscles of this joint; but on removing all these muscles and their tendons, it was not diminished, and it therefore became clear that it depended on some peculiar mechanism within the joint itself.

Before I enter into the details of this mechanism, it is necessary to remark, *that it is evidently connected with the power this animal possesses, of sleeping standing*, for it serves the purpose of keeping the hock-joint in the extended position, so far as to counteract the oscillations of the body, without the aid of muscular exertion; and in this respect it resembles the provision made to effect a similar purpose in certain birds, as the stork, and some others of the grallæ, which sleep standing on one foot. It will appear, also, in the sequel, that not only is the effect produced the same, but the mechanism is in many respects similar, if the account given by Cuvier, and also by Dr. Macartney, in Rees' Cyclopedia, article *Birds*, be correct.

Sheep and cows are not provided with ankle-joints of a similar structure, and it is well known that these animals do not possess the power of sleeping standing. Another circumstance which adds additional interest to this peculiarity of structure, is, that it may possibly be connected with the disease termed *String-halt*, in which the limb is at each step suddenly flexed to a degree far beyond that required in ordinary progression. Whether this is owing to a sudden and jerking flexion of the whole limb, or to flexion of the hock-joint alone, I have had no opportunity lately of determining. If the latter be the case, it is probably connected with the structure of the hock-joint, which I am about to describe. It may be right to observe that not even a probable conjecture has been advanced, concerning the nature and cause of string-halt, a disease to which the sheep and cow are not subject, and we have already observed, that in these animals the structure of this joint presents nothing remarkable.

The hock-joint is a good example of what is termed the hinge-like articulation, and is formed between the tibia and astragalus, which latter bone presents an articulating surface; with a nearly semicircular outline, and divided into two ridges, including between them a deep fossa. The tibia is furnished with depressions which ride upon the ridges of the astragalus, and has anterior and posterior projections, which, moving in the fossa, and received into corresponding depressions in the astragalus, at the moment the limb arrives at the greatest degree either of flexion or of extension.

The shape of the surfaces of the astragalus concerned in the articulation, is not that a given circle throughout, for towards either extremity, the *descent is more rapid*, or, in other words, answers to an arc of a smaller circle. Hence, when one of the objections of the tibia has arrived at its corresponding cavity in the astragalus, which happens when the limb is either completely flexed or completely extended, the rapid curve of the articulating surface presents a considerable obstruction to change a position. Thus, the form of the articulating surfaces, in itself, to a certain degree, explains the phenomenon; but its chief cause is to be found in the disposition and arrangement of the ligaments.

The external malleolus of the tibia is divided by a deep groove, for the passage of a tendon, into an anterior and posterior tubercle; from the latter of which, and close to the edge of the articulating surface, arises a strong and broad ligament that is inserted into the os calcis. Under this lies another ligament, which, arising from the anterior tubercle,

is also inserted into the os calcis. It is to be observed, that the origin of the latter was anterior to that of the former, but its insertion posterior, so that these lateral ligaments cross each other in the form of an ×. The external articulating protuberance of the astragalus on which the tibia revolves, has, as has been already stated, a nearly circular outline, and the attachments of the ligaments just described, are at points on the outside of the os calcis, which would lie nearly in the circumference of that circle, were it continued from the articulating surface; so that each of these ligaments has one of its extremities fixed in a certain point of the circumference, while its opposite extremity revolves during the motion of the joint, nearly in the circumference of the same circle. This observation applies likewise to the two lateral ligaments on the inner side of the joint, which have nearly the same relation to each other, and to the general contour of the joint, as that just described; so it is obvious, that during the rotation of the joint, as the origins of these ligaments move along the same circumference in which their attachments are fixed, the ligaments will be most stretched when they correspond to diameters of that circle.

Now it is so arranged that this happens at the same time for all, and consequently the ligaments on each side correspond not merely as to direction, but as to the point of time they become most stretched, which is nearly at the moment that the joint has no tendency to move either way, and at that moment, it is to be observed, that although the ligaments are most tense, and of course react on their points of attachment with greatest force, yet this produces no motion, as the force is exerted in a direction perpendicular to the circumference; but as soon as the tibia is moved beyond this point of inaction for the ligament, the latter, no longer representing diameters, by their contractile force evidently tend to accelerate the motion; and as they all act in the same direction, and are assisted by the shape of the articulating surfaces, a sudden motion of flexion or extension is thus produced.

The preceding explantion supposes the ligaments to possess, contrary to the nature of ligaments, in general, a certain degree of elasticity, which was evidently the case in all, *but particularly* in the most deep-seated of those on the inner side of the joint, which, therefore, appears most concerned in producing the sudden motion, whether of flexion or extension.—*Edin. Philos. Jour.*

There is no fish which yields so much oil in proportion to its size, as the Porpoise, and therefore renders its capture an object of consideration; and it is said, that whenever a Porpoise happens to be wounded, all the rest of its companions will immediately fall upon, and devour it.

THE BREAD FRUIT.

The bread-fruit, originally found in the south-eastern parts of Asia, and the islands of the Pacific, though now introduced into the tropical parts of the western continent, and the West India islands, is one of the most interesting, as well as singular productions of the vegetable kingdom. There are two species of it: the bread-fruit, properly so called (*Artocarpus incisa*), with the leaves deeply gashed or divided at the sides, which grows chiefly in the islands; and the Jack fruit, or Jaca tree (*Artocarpus integrifolia,*) with the leaves entire, which grows chiefly on the main land of Asia.

The bread-fruit is a beautiful as well as a useful tree: the trunk rises to the height of about forty feet, and, in a full grown tree, is from a foot to fifteen inches in diameter; the bark is ash-coloured; full of little chinks, and covered by small knobs; the inner bark is fibrous, and is used in the manufacture of a sort of cloth; and the wood is smooth, soft; and of a yellow colour. The branches come out in a horizontal manner, the lowest ones about ten or twelve feet from the ground; and they become shorter and shorter as they are nearer and nearer the top: the leaves are divided into seven or nine lobes, about eighteen inches or two feet long, and are of a lively green. The tree bears male and female flowers, the males among the upper leaves, and the females at the extremities of the twigs. When full grown, the fruit is about nine inches long, heart-shaped, of a greenish colour, and marked with hexagonal warts, formed into facets. The pulp is white, partly farinaceous and partly fibrous; but, when quite ripe, it becomes yellow and juicy. The whole tree, when in a green state, abounds with a viscid milky juice, of so tenacious a nature as to be drawn out in threads.

In the island of Otaheite and other places, where the bread-fruit forms the chief support of the people, there are, as is the case with cultivated vegetables in all countries, many varieties; only two, however, are very different from each other—that which contains seeds in the fruit, and that which contains none. The variety with seeds is much inferior to the other, being more fibrous, containing less farina, and not so pleasant to the taste; it is, therefore, not cultivated, though, in cases of need it is roasted and eaten. Whether the seedless sort has been produced wholly by cultivation it is not easy, and would not be of much importance, to ascertain: it is the one cultivated in the South Sea islands; it was originally found only there; and the tree was not in much repute till these islands were discovered.

The bread-fruit continues productive for about eight months in the year: such is its abundance, that two or three trees will suffice for a man's yearly supply, a store being

made into a sour paste, called *mahe* in the islands, which is eaten during the unproductive season. The planting of the seedless variety is now saved, as the creeping roots send up suckers which soon grow to trees. When the fruit is roasted till the outside is charred, the pulp has a consistency not very unlike that of wheaten bread; and the taste is intermediate between that of bread and roasted chesnuts. It is said to be very nourishing, and is prepared in various ways.

The timber of the bread-fruit, though soft, is found useful in the construction of houses and boats; the male flowers, dried, serve for tinder; the juice answers for bird-lime and glue; the leaves for packing and for towels; and the inner bark, beaten together, makes one species of the South Sea cloth.

The earliest account of the bread-fruit is by Captain Dampier, in 1688. "The bread-fruit," says this navigator, "grows on a large tree, as big and high as our largest apple trees; it hath a spreading head, full branches, and dark leaves. The fruit grows on the boughs like apples; it is as big as a penny loaf, when wheat is at five shillings the bushel; it is of a round shape, and hath a thick tough rind. When the fruit is ripe, it is yellow and soft, and the taste is sweet and pleasant. The natives of Guam use it for bread. They gather it when full grown, while it is green and hard; they then bake it in an oven which scorcheth the rind, and maketh it black; but they scrape of the outside black crust, and there remains a tender thin crust; and the inside is soft, tender, and white, like the crumb of a penny loaf. There is *neither seed nor stone* in the inside, but all of a pure substance like bread. It must be eaten new, for, if it be kept above twenty-four hours, it grows harsh and choky, but it is very pleasant before it is too stale. This fruit lasts in season *eight months* in the year, during which the natives eat no other sort of bread kind. I did never see of this fruit any where but here. The natives told us, that there is plenty of this fruit growing on the rest of the Ladrone Islands; and I did never hear of it anywhere else."

The scientific men who accompanied Captain Cook in his voyages, came home with the most enthusiastic ideas of the bread-fruit. Dr. Solander calls it "the most useful vegetable in the world," and urges that no expense should be spared in its cultivation. The mere idea of bread, the most valuable food of man, growing spontaneously, was doubtless calculated to excite attention—almost, perhaps, as strongly as the subsequent description of the poet:—

> "The bread-tree, which, without the ploughshare, yields
> The unreap'd harvest of unfurrow'd fields,
> And bakes its unadulterated loaves
> Without a furnace in unpurchased groves,
> And flings off famine from its fertile breast,
> A priceless market for the gathering guest." *Byron.*

A tree, of the value and easy culture of which so very encouraging accounts were given, could not but attract the notice of the public generally, and more especially of those colonists of Great Britain who lived in a climate warm enough for its cultivation. An application to be furnished with plants of the bread-fruit tree was accordingly made to his late Majesty by the planters and others interested in the West Indies, and it met with a favourable reception. The Bounty, a vessel of about two hundred and fifteen tons burthen, was fitted up for a voyage to Otaheite. Lieutenant (afterwards Admiral) Bligh, who had accompanied Cook on his last voyage, and shown himself an officer of great talents, enterprise, and bravery, was appointed to the command. In addition to the crew of the vessel, two men were appointed at the recommendation of Sir Joseph Banks, to take immediate charge of the procuring, shipping, and tending of the plants.

The Bounty was skilfully fitted up for her intended purpose. A large cabin between decks, in midships, was prepared for the reception of the plants. This had two large skylights on the top for light; three scuttles on each side for ventilation of air, and a double bottom; an upper one of timber on which to place the pots and tubs containing the plants, which was drilled full of holes to allow escape to the superfluous water which might have injured them by stagnation—and a leaden one upon the lower deck, in which the water that ran through the other was collected, and from which it was conducted by a leaden pipe at each corner, into casks below for future use.

Thus prepared, the vessel put to sea about the middle of November, 1787, but was beat about and baffled by contrary winds, so that the voyage was not commenced till the 23d of December. The instructions given to Lieutenant Bligh were full and explicit. He was to resort to those places in the Society Isles where Captain Cook had stated that the bread-fruit tree was to be found in the greatest luxuriance, and there procure as many plants as the vessel could carry; after which he was to proceed with them to the West Indies with all possible expedition.

The commander sailed first for Teneriffe, and thence for the South of America, intending to enter the Pacific by the passage of Cape Horn. But the storms of that inhospitable region beat him back; and he was forced to bear away for the Cape of Good Hope, and reach the Society Islands on the side of New Holland. This voyage, which had occupied ten months terminated on the 25th October, by the arrival of the Bounty at Otaheite.

No time was lost in putting the instructions into execution. The young shoots that sprung from the lateral roots of the bread-fruit trees were taken up, with balls of earth, where the soil was moist; and this operation was continued

till they were in possession of one thousand and fifteen live plants, secured in seven hundred and seventy-four pots, thirty-nine tubs, and twenty-four boxes. To complete this cargo took them till the 3d of April, 1789; and Bligh sailed on the fourth, passing from Otaheite through the groupe of islands, and bidding adieu to the natives, with whom he and his crew had been on most friendly terms during their stay.

Hitherto there had been no perils to contend with but those of the sea; but when four and twenty days had elapsed, and they were of course, far from land, a new scene took place, which frustrated for a time the bounty of the government and the skill of the commander. Under the cloak of fidelity, a mutiny had been forming of a very determined and extensive nature; and so well had the mutineers disguised their intention, that not one but those who were in the plot had the slightest suspicion of it.

The known bravery of Lieutenant Bligh made the mutineers afraid to attack him awake; and so, on the morning of the 28th of April, he was seized while asleep in his bed, by a band of armed traitors, and hurried upon deck in his shirt; and, on coming there, he found the master, the gunner, one of the master's mates, and Nelson the botanist, who had been with him under Cook, confined in the fore hatchway, and guarded by sentinels. The launch was hoisted; and such individuals as the mutineers did not like, were ordered to quit the ship, and forced if they refused or hesitated. Eighteen individuals out of the forty-six remained true to the commander; and one of them, Mr. Samuel, the clerk, contrived to save Mr. Bligh's commission and journals; but he failed in attempting to procure Bligh's surveys, drawings, and remarks during fifteen years, which were exceedingly valuable, and the time-keeper. Four of the men, who kept their allegiance, were detained by the mutineers contrary to their wishes. The cause of this singular mutiny, for which none of the usual motives could very well account, could not with certainty be known; but it was generally supposed that the instigator was Mr. Christian, one of the master's mates. Bligh himself says, in his most interesting account of this voyage and mutiny, "It will naturally be asked what could be the cause of this revolt? In answer, I can only conjecture that the mutineers had flattered themselves with the hope of a happier life among the Otaheitans than they could possibly enjoy in England."

Thus, after they had made certain of the successful termination of an enterprise which was looked upon with a great deal of interest, both in a scientific and economical point of view, Bligh was disappointed—and he and his faithful associates were sent adrift upon the wide ocean, in an open boat, with only an hundred and fifty pounds of bread, a few pieces of pork, a little wine and rum, a quadrant and compass, and a few other implements of navigation. But they were undaunted, and they were skilful; and though they had hard weather to contend with, they reached Tofoa, one of the Friendly Islands. But as the people there were as treacherous, though not quite so successful in their treachery, as their former shipmates, they again put to sea, and stood for New Holland, which they reached in safety; rested for a little, and got a supply of provisions. From New Holland they again sailed in the direction of the Eastern Archipelago; and, after suffering the greatest fatigue, being exposed to the full action and vicissitudes of the elements, and forced for some time to bear famine, they reached the Dutch settlement of Coupang, in the island of Timor, without the loss of one individual by disease; though they had traversed at least five thousand miles of sea. Nay, so ardent was Bligh as a seaman, that, amid all those perils, he was occupied in making some very valuable observations.

The Dutch governor of Coupang showed them every attention; and, from the care that was taken of them, twelve were enabled to return to England. Though the adventure had failed, every body was disposed to bestow all praise on the adventurer; and he was promoted to the rank of captain, and appointed to the command of his Majesty's ship Providence, in order to repeat the voyage.

The Providence, with the Assistant, a small ship in company, sailed on the 3d of August, 1791. His instructions were to procure the bread-fruit trees for the West Indies, and, on his return, to examine the passage between the north of New Holland and New Guinea—which, in his former voyage in the Bounty, he had been the first to navigate.

On the 9th of April, 1792, they reached Otaheite; and, by the 17th of July, they were ready to leave the island, having on board twelve hundred and eighty-one tubs and pots of plants, all in the finest condition. There was no mutiny on this voyage; but the passage between New Holland and New Guinea was dangerous; and it was the 2d of October before the captain reached his old friends at Coupang. He remained there for a week, replacing with plants from that island those that had died on the voyage; and then he came to the Atlantic by the Cape of Good Hope, which he contrived to pass so closely as never to have a lower temperature than sixty-one degrees of Fahrenheit.

On the 17th of September, he anchored at St. Helena, collected there a number of trees, and among others the akee; and, leaving twenty-three bread-fruits, and some other valuable plants, he sailed, and reached St. Vincent on the 23d of January, 1793—where he left, with Dr. Anderson, the superintendent of the Botanical Garden, three hundred and thirty three bread-fruit trees, and two hundred and eleven fruit trees of other kinds, receiving at the same time nearly five hundred tropical plants for the Botanical

Garden at Kew. From St. Vincent, Captain Bligh sailed for Jamaica, where he left three hundred and forty-seven bread-fruits, and two hundred and seventy-six others, which were a selection of all the finest fruits of the east. Some of the plants were also left on the island of Grand Cayman; and the ships finally came to the Downs on the 2d of August, 1793.

But, after all the peril, hardship, and expense thus incurred, the bread-fruit tree has not, hitherto, at least, answered the expectations that were entertained. The banana is more easily and cheaply cultivated, comes into bearing much sooner after being planted, bears more abundantly, and is better relished by the negroes. The mode of propagating the bread-fruit is not, indeed, difficult; for the planter has only to lay bare one of the roots, and mound it with a spade, and in a short space a shoot comes up, which is soon fit for removal.

Europeans are much fonder of the bread-fruit than negroes. They consider it as a sort of dainty, and use it either as bread or in pudding. When roasted in the oven, the taste of it resembles that of a potatoe, but it is not so mealy as a good one.

DECEMBER.

Nature is stripped of all her summer drapery. Her verdure, her foliage, her flowers have all vanished. The sky is filled with clouds and gloom, or sparkles only with a frosty radiance. The earth is spongy with wet, rigid with frost, or buried in snows. The winds that in summer breathed gently over nodding blooms, and undulating grass, swaying the leafy boughs with a pleasant murmur, and wafting perfumes all over the world, now hiss like serpents, or howl like wild beasts of the desert; cold, piercing, and cruel. Every thing has drawn as near as possible to the centre of warmth and comfort. The farmer has driven his flocks and cattle into sheltered home inclosures, where they may receive from his provident care, that food which the earth now denies them; or into the farm-yard itself, where some honest Giles piles their cratches plentifully with fodder. The labourer has fled from the field to the barn, and the measured strokes of his flail are heard daily from morn till eve. It amazes us, as we walk abroad, to conceive where can have concealed themselves the infinite variety of creatures that sported through the air, earth, and waters of summer. Birds, insects, reptiles, whither are they all gone? The birds that filled the air with their music, the rich blackbird, the loud and cheerful thrush, the linnet, lark, and goldfinch, whither have they crept? The squirrel that played his antics on the forest tree; and all the showy and varied tribes of butterflies, moths, dragonflies, beetles, wasps, and warrior-hornets, bees, and cockchafers, whither have they fled? Some, no doubt, have lived out their little term of being, and their bodies, lately so splendid, active, and alive to a thousand instincts, feelings, and propensities, are become part and parcel of the dull and wintry soil; but the greater portion have shrunk into the hollows of trees and rocks, and into the bosom of their mother earth itself, where, with millions of seeds and roots, and buds, they live in the great treasury of Nature, ready at the call of a more auspicious season, to people the world once more with beauty and delight.

As in the inferior world of creatures, so is it with man. The wealthy have vacated their country houses, and congregated in the great Babylon of pleasure and dissipation; families are collected around the social hearth, where Christmas brings his annual store of frolic and festivities; and the author, like the bee, withdrawn to his hive, revels amid the sweets of his summer gathering. It is amusing to imagine what a host of pens are at this moment in motion, in sundry places of this little island! In splendid libraries, furnished with every bodily comfort, and every literary and scientific resource, when the noble or popular author fills the sheet which the smile of the bibliopole and reader awaits, and almost anticipates; in naked and ghastly garrets when the "poor-devil-author" scrawls with numbed fingers and a shivering frame, what will be coldly received, and as quickly forgotten as himself; in pleasant boudoirs, at rose-wood desks, where lady-fingers pen lady-lays; in ten thousand nooks and recesses the pile of books is growing, under which, shelves, booksellers, and readers, shall groan, ere many months elapse. Another season shall come round, and all these leaves, like those of the forest, shall be swept away, leaving only those of a few hardy laurels untouched. But let no one lament them, or think that all this "labour under the sun," has been in vain. Literary tradesmen have been indulged in speculation; critics have been employed; and authors have enjoyed the excitement of hope, the enthusiasm of composition, the glow of fancied achievement. And all is not lost;

> The following year another race supplies,
> They fall successive, and successive rise.

The heavens present one of the most prominent and splendid beauties of winter. The long and total absence of the sun's light, and the transparent purity of a frosty atmosphere, give an apparent elevation to the celestial concave, and a rich depth and intensity of azure, in which the

stars burn with resplendent beauty; the galaxy stretches its albescent glow athwart the northern sky, and the moon in her monthly track sails amongst the glittering constellations with a more queenly grace; sometimes without the visitation of a single cloud, and, at others, seeming to catch from their wind-winged speed an accelerated motion of her own. It is a spectacle of which the contemplative eye is never weary; though it is one, of all others, which fills the mind with feelings of the immensity of the universe, the tremendous power of its Creator, and of the insignificance of self. A breathing atom, a speck even, upon the surface of a world which is itself a speck in the *universal* world, we send our imagination forth amongst innumerable orbs, all stupendous in magnitude, all swarming with existence, vainly striving to reach the boundaries of space, till, astonished and confounded, it recoils from the hopeless task, aching, dazzled, and humbled in the dust. What a weary sense attends the attempt of a finite being to grasp infinity! Space beyond space! space beyond space still! There is nothing for the mind to rest its wearied wing upon, and it shrinks back into its material cell, in adoration and humility. Such are the feelings and speculations which have attended the human spirit in all ages, in contemplating this magnificent spectacle. David has beautifully expressed their effect upon him; and there is a paper in the Spectator, Vol. viii. No. 565, which forms an admirable commentary upon his eloquent exclamation. The awful vastness of the power of the Diety, evinced in the scenes which night reveals, is sure to abase the pride of our intellect; and to shake the overgrowth of our self-love; but these influences are not without their benefit; and the beauty and beneficence equally conspicuous in every object of creation, whether a world or an atom, comes to our aid, to re-assure our confidence, and to animate us with the proud prospect of an eternity of still perfecting and ennobling existence.

But the year draws to a close. I see symptoms of its speedy exit. I see holly and missletoe in the market, in every house that I visit, in every window that I pass, except in those of the Society of Friends, who, though they like old fashions, pay little regard to old customs, but treat them as the "beggarly elements" of worn out superstitions. They are philosophically right, but poetically wrong. I see the apprentice boys going along the streets, from house to house, distributing those little annual remembrances called Christmas-bills; and my imagination follows these tyroes in trade, who now fill its lowest offices, and would think more of a slide or a mince-pie than of all the "wealth in Lunnun bank," through a few more years, and beholds them metamorphosed into grave, important, and well-to-do citizens; or, as it may chance to them, shrunk into the thin, shrivelled, and grasshopper-like beings that care and disappointment convert men into. And this awakes in me the consciousness of how little we have thought of man and his toils, and anxieties, as from day to day, and month to month, we have gone wandering over the glorious face of the earth, drinking in its peaceful pleasures; and yet what a mighty sum of events has been consummated!—what a tide of passions and affections has flowed,—what lives and deaths have alternately arrived—what destinies have been fixed for ever, while we have loitered on a violet-path, and watched the passing splendours of the Seasons. Once more our planet has completed one of those journeys in the heavens which perfect all the fruitful changes of its peopled surface, and mete out the few stages of our existence; and every day, every hour of that progress has, in all her wide lands, in all her million hearts, left traces that eternity shall behold.

Yet if we have not been burthened with man's cares, we have not forgotten him, but many a time have we thanked God for his bounties to him, and rejoiced in the fellowship of our nature. If there be a scene to stir in our souls all our thankfulness to God, and all our love for man, it is that of Nature. When we behold the beautiful progression of the Seasons, when we see how leaves and flowers burst forth and spread themselves over the earth by myriads in spring, —how summer and autumn fill the world with loveliness and fragrance, with corn and wine, it is impossible not to feel our hearts, "breathe perpetual benedictions" to the great Founder and Provider of the world, and warm with sympathetic affection towards our own race, for whom he has thought fit to prepare all this happiness. There is no time in which I feel these sentiments more strongly than when I behold the moon rising over a solitary summer landscape. The repose of all creatures of the earth makes more sensibly felt the incessant care of him who thus sends up "his great light to rule the night," and to shine softly and silently above millions of sleeping creatures, that take no thought for themselves.

Such are the thoughts which flow into the spirit of the solitary man as he walks through the pure retreats of Nature—such have been mine as I have gone on, from day to day, building up this "Book of the Seasons;" and in the spirit of thankful happiness and "goodwill to all," I thus bring it to an end.—*Howitt's Book of the Seasons.*

PRESERVATION OF FRUIT TREES FROM HARES.

According to M. Bus, young fruit trees may be preserved from the bites of hares, by rubbing them with fat, and especially hog's lard. Apple and pear trees thus protected, gave no signs of the attacks of these animals, though their foot marks were abundant on the snow beneath them.

RAVEN.

CORVUS CORAX.

[Plate XXIV.]

Gmel. *Syst.* 1, *p.* 364.—*Ind. Orn. p.* 150.—*Le Corbeau*, Briss. 2. *p.* 8, *et var.*—Buff. *Ois.* 3, *p.* 13. *Pl. enl.* 495.—Temm. *Man. d'Orn. p.* 107.—*Raven*, Lath. *Gen. Syn.* 1. *p.* 367. *Id. sup. p.* 74.—Penn. *Brit. Zool. No.* 74. *Arct. Zool. No.* 134.—Shaw, *Gen. Zool.* 7, *p.* 341.—Bewick, 1, *p.* 100.—Low, *Fauna Orcadensis*, *p.* 45.—Philada. *Museum.*

"A knowledge of this celebrated bird has been handed down to us from the earliest ages; and its history is almost coeval with that of man. In the best and most ancient of all books, we learn, that at the end of forty days, after the great flood had covered the earth, Noah, wishing to ascertain whether or not the waters had abated, sent forth a Raven, which did not return into the ark.* This is the first notice that is taken of this species. Though the Raven was declared unclean by the law of Moses, yet we are informed, that when the prophet Elijah provoked the enmity of Ahab, by prophesying against him; and hid himself by the brook Cherith, the Ravens were appointed by Heaven to bring him his daily food.† The colour of the Raven gave rise to a similitude in one of the most beautiful of eclogues, which has been perpetuated in all subsequent ages, and which is not less pleasing for being trite or proverbial. The favourite of the royal lover of Jerusalem, in the enthusiasm of affection, thus describes the object of her adoration, in reply to the following question:

'What is thy beloved more than another beloved, O thou fairest among women?' 'My beloved is white and ruddy, the chiefest among ten thousand. His head is as the most fine gold, *his locks are bushy, and black as a Raven.*'‡

The above mentioned circumstances taken into consideration, one should suppose that the lot of the subject of this chapter would have been of a different complexion from what history and tradition inform us is the fact. But in every country, we are told, the Raven is considered an omnious bird, whose croakings foretell approaching evil; and many a crooked beldam has given interpretation to these oracles, of a nature to infuse terror into a whole community. Hence this ill-fated bird, immemorially, has been the innocent subject of vulgar detestation.

Augury, or the art of foretelling future events by the flight, cries, or motion of birds, descended from the Chaldeans to the Greeks, thence to the Etrurians, and from them it was transmitted to the Romans.* The crafty legislators of these celebrated nations, from a deep knowledge of human nature, made superstition a principal feature of their religious ceremonies; well knowing that it required a more than ordinary policy to govern a multitude, ever liable to the fatal influences of passion; and who, without some timely restraints, would burst forth like a torrent, whose course is marked by wide-spreading desolation. Hence, to the purposes of polity the Raven was made subservient; and the Romans having consecrated it to Apollo, as to the god of divination, its flight was observed with the greatest solemnity; and its tones and inflections of voice were noted with a precision, which intimated a belief in its infallible prescience.

But the ancients have not been the only people infected with this species of superstition: the moderns, even though favoured with the light of Christianity, have exhibited as much folly, through the impious curiosity of prying into futurity, as the Romans themselves. It is true that modern nations have not instituted their sacred colleges or sacerdotal orders, for the purposes of divination; but in all countries there have been self-constituted augurs, whose interpretations of omens have been received with religious respect by the credulous multitude. Even at this moment, in some parts of the world, if a Raven alight on a village church, the whole fraternity is in an uproar; and Heaven is importuned, in all the ardour of devotion, to avert the impending calamity.

The poets have taken advantage of this weakness of human nature, and in their hands the Raven is a fit instrument of terror. Shakspeare puts the following malediction into the mouth of his Caliban:

> "As wicked dew as ere my mother brush'd
> With *Raven's* feather, from unwholesome fen
> Drop on you both!"†

* Gen. viii. 7.

† 1 Kings, xvii. 5, 6.

‡ Song of Solomon, v. 9, 10, 11.

* That the science of augury is very ancient, we learn from the Hebrew lawgiver, who prohibits it, as well as every other kind of divination. Deut. chap. xviii. The Romans derived their knowledge of augury chiefly from the Tuscans or Etrurians, who practised it in the earliest times. This art was known in Italy before the time of Romulus, since that prince did not commence the building of Rome till he had taken the auguries. The successors of Romulus, from a conviction of the usefulness of the science, and at the same time not to render it contemptible, by becoming too familiar, employed the most skilful augurs from Etruria, to introduce the practice of it into their religious ceremonies. And by a decree of the senate, some of the youth of the best families in Rome were annually sent into Tuscany, to be instructed in this art. Vide Cicero. de Divin. Also Calmet, and the abbé Banier.

† Tempest, act i. scene 2.

Drawn from Nature & on Stone by T. Doughty.

RAVEN.

Printed by Childs & Inman's Press.

The ferocious wife of Macbeth, on being advised of the approach of Duncan, whose death she had conspired, thus exclaims:

> "The *Raven* himself is hoarse,
> That croaks the fatal entrance of Duncan
> Under my battlements!"*

The Moor of Venice says:

> "It comes o'er my memory,
> As doth the *Raven* o'er the infected house,
> Boding to all."†

The last quotation alludes to the supposed habits of this bird flying over those houses which contain the sick, whose dissolution is at hand, and thereby announced. Thus Marlowe, in the Jew of Malta, as cited by Malone:

> "The sad presaging *Raven* tolls
> The sick man's passport in her hollow beak,
> And in the shadow of silent night
> Doth shake contagion from her sable wing."

But it is the province of philosophy to dispel those illusions which bewilder the mind, by pointing out the simple truths which Nature has been at no pains to conceal, but which the folly of mankind has shrouded in all the obscurity of mystery.

The Raven is a general inhabitant of the United States, but is more common in the interior. On the lakes, and particularly in the neighbourhood of the Falls of the river Niagara, they are numerous; and it is a remarkable fact, that where they so abound, the common Crow, *C. corone*, seldom makes its appearance; being intimidated, it is conjectured, by the superior size and strength of the former, or by the antipathy which the two species manifest towards other. This I had an opportunity of observing myself, in a journey during the months of August and September, along the lakes Erie and Ontario. The Ravens were seen every day, prowling about in search of the dead fish, which the waves are continually casting ashore, and which afford them an abundance of a favourite food; but I did not see or hear a single Crow within several miles of the lakes; and but a very few through the whole of the Gennesee country.

The food of this species is dead animal matter of all kinds, not excepting the most putrid carrion, which it devours in common with the Vultures; worms, grubs, reptiles and shell-fish, the last of which, in the manner of the Crow, it drops from a considerable height in the air, on the rocks, in order to break the shells; it is fond of birds eggs, and is often observed sneaking around the farm-house, in search of the eggs of the domestic poultry, which it sucks with eagerness; it is likewise charged with destroying young ducks and chickens, and lambs which have been yeaned in a sickly state. The Raven, it is said, follows the hunters of deer for the purpose of falling heir to the offal;* and the huntsmen are obliged to cover their game, when it is left in the woods, with their hunting frocks, to secure it from this thievish connoisseur, who, if he have an opportunity, will attack the region of the kidneys and mangle the saddle without ceremony.

Buffon says, that "the Raven *plucks out the eyes of Buffaloes*, and then *fixing on the back, tears off the flesh deliberately;* and what renders the ferocity more detestable, it is not incited by the cravings of hunger, but by the appetite for carnage; for it can subsist on fruits, seeds of all kinds, and indeed may be considered an omnivorous animal." This is mere fable, and of a piece with many other absurdities of the same agreeable, but fanciful author.

This species is found almost all over the habitable globe. We trace it in the north from Norway to Greenland, and hear of it in Kamtschatka. It is common every where in Russia and Siberia, except within the Arctic circle; and all through Europe. Kolben enumerates the Raven among the birds of the Cape of Good Hope; De Grandpré represents it as numerous in Bengal, where they are said to be protected for their usefulness; and the unfortunate La Perouse saw them at *Baie de Castries*, on the east coast of Tartary; likewise at *Port des Françoix;* 58° 37′ north latitude, and 139° 50′ west longitude; and at Monterey Bay, north California. The English circumnavigators met with them at Nootka Sound; and at the Sandwich Islands, two being seen in the village of Kakooa; also at Owhyhee, and supposed to be adored there, as they were called Eatoos. Our intrepid American travellers, under the command of Lewis and Clark, shortly after they embarked on the river Columbia, saw abundance of Ravens, which were attracted thither by the immense quantity of dead salmon which lined the shores. They are found at all seasons in Hudson's Bay; are frequent in Mexico; and it is more than probable that they inhabit the whole continent of America.

The Raven measures, from the tip of the bill to the end of the tail, twenty-six inches, and is four feet in extent; the bill is large and strong, of a shining black, notched near the tip, and three inches long, the sestaceous feathers which cover the nostrils extend half its length; the eyes are black; the general colour is a deep glossy black, with steel-blue reflections; the lower parts are less glossy; the tail is rounded,

* Act i. scene 5.

† Othello, act iv. scene I.

* This is the case in those parts of the United States where the deer are hunted without dogs: where these are employed they are generally rewarded with the offal.

and extends about two inches beyond the wing; the feathers on the breast have a curly appearance; the legs are two inches and a half in length, and, with the feet, are strong and black; the claws are long.

This bird is said to attain to a great age; and its plumage to be subject to change, from the influence of years and of climate. It is found in Iceland and Greenland entirely white.

The voice of the Raven is exceedingly harsh, and croaking, and is uttered chiefly when flying, and may be heard at the distance of nearly one mile, on a clear, still day.

The Raven was the constant attendant of Lewis and Clark's party, in their long and toilsome journey. During the winter, at Fort Mandan, they were observed in immense numbers, notwithstanding the cold was so excessive, that, on the seventeenth of December, 1804, the thermometer of Fahrenheit stood at 45° below 0.

The Raven is a bird found in every region of the world; strong and hardy, he is uninfluenced by the change of the weather; and when other birds seem numbed with cold, or pining with famine, the Raven is active and healthy, busily employed in prowling for prey, or sporting in the coldest atmosphere. As the heats of the line do not oppress him, so he bears the cold of the polar countries with equal indifference. He is sometimes, indeed, seen milk-white, and this may probably be the effect of the rigorous climates of the north.

When the Raven is taken as a domestic, he has many qualities that renders him extremely amusing. Busy, inquisitive, and impudent, he goes every where, affronts and drives off the dogs, plays his pranks on the poultry, and is particularly assiduous in cultivating the goodwill of the cook maid, who seems to be the favourite of the family. But then, with the amusing qualities of a favourite, he often also has the vices and defects. He is a glutton by nature, and a thief by habit. He does not confine himself to petty depredations on the pantry or the larder; he soars at more magnificent plunder; at spoils which he can neither exhibit nor enjoy; but which, like a miser, he rests satisfied with having the satisfaction of sometimes visiting and contemplating in secret. A piece of money, a tea-spoon, or a ring, are always tempting baits to his avarice; these he will slily seize upon, and, if not watched, will carry to his favourite hole.

In his wild state, the Raven is an active and greedy plunderer. Nothing comes amiss to him. If in his flights he perceives no hope of carrion, (and his scent is so exquisite, that he can smell it at a vast distance), he then contents himself with more unsavoury food, fruits, insects, and the accidental deserts of a dunghill. This bird chiefly builds its nest in trees, and lays five or six eggs of a pale green colour, marked with small brownish spots.

Notwithstanding the injury these birds do in picking out the eyes of sheep and lambs, when they find them sick and helpless, a vulgar respect is paid them as being the birds that fed the prophet Elijah in the wilderness. This prepossession in favour of the Raven is of very ancient date, as the Romans themselves, who thought the bird ominous, paid it, from motives of fear, the most profound veneration. One of these that had been kept in the temple of Castor, as Pliny informs us, flew down into the shop of a tailor, who took much delight in the visits of his new acquaintance. He taught the bird several tricks; but particularly to pronounce the name of the Emperor Tiberius and the whole royal family. The tailor was beginning to grow rich by those who came to see this wonderful Raven, till an envious neighbour, displeased at the tailor's success, killed the bird, and deprived the tailor of his future hopes of fortune. The Roman's, however, took the poor tailor's part; they punished the man who offered the injury, and gave the Raven all the honours of a magnificent entertainment.

Birds in general live longer than quadrupeds; and the Raven is said to be one of the most long-lived of the number. Some of them have been known to live near a hundred years. This animal, indeed, seems possessed of those qualities that generally produce longevity, namely, a good appetite, and great exercise."

TO BLOW EGGS FOR PRESERVATION

IN CABINETS.

A READY method of effecting this purpose, is to take a tube either of glass or metal, one end of which is drawn out, or fashioned to a point, (the tube being large enough to hold the contents of the egg,) and having made a pin hole at the side of the egg, large enough to admit the point of the pipe, (one sixth part of an inch) apply the mouth to the large end, and suck as hard as possible. The contents of the egg will immediately rise into the tube. Having blown them out into a basin, suck a little clean water into the tube and blow it into the egg; shake the egg for about a minute, and draw out the water again into the tube, and it will leave the egg perfectly clean. The common dropping tube of the chemist, which has a ball in the middle of it, answers this purpose extremely well.—*Loudon's Mag. of Nat. History, March*, 1831.

AN ADVENTURE.

How direful are the effects of revenge.——

It was on as beautiful an autumnal day, as ever ushered in the Indian summer, that I made an excursion after game among a groupe of mountains, or rather on a link in the great chain of the Alleghany range, which runs in a north eastern direction in that part of Pennsylvania, which bounds the New York line. I had been a resident there for some years; and, when leisure from my arduous avocations permitted, I always indulged myself with the favourite amusement of hunting.

I said the day was beautiful. When I arose from my bed, the stars were yet twinkling in the azure space above, while feebly, but most beautifully, the sparkling frost which spread the earth as a woolly carpet, reflected back, like myriads of gems, its borrowed light to the heavens; not a breath of air disturbed the fading leaves of the wood, and the reigning silence was broken only by the monotonous tone of a neighbouring cascade, while the pearly horizon of the east, betokened the approach of that hour which was to give life and activity to a slumbering world; my heart was light, and nerved with youthful vigor, and the healthfulness of the opening morn, I felt as though I could wield my rifle with unerring aim. Ere the sun arose I eat my breakfast; and after giving all necessary orders for the day, to the man at my saw-mill, I accoutred myself for hunting and sallied forth alone among the hills in search of game. Bending my way towards some salt springs which were within a few miles of my dwelling, I kept the mountain ridge with the expectation of encountering some large game, until I found it necessary to descend to that part of the valley which contained the springs. A few years previous to the above period, these springs were resorted to by herds of deer and other animals, for the purpose of licking the saline sediment which every where adhered to the roots of those trees, bushes, and stones that were washed by the salt water while flowing down the vale, in consequence of which, hunters for many miles around, made frequent excursions to this spot, in order to lie in ambush for such animals as might approach this salt-lick, until at last it had become so notorious, and frequented by so many hunters, that a visit here was sometimes attended with danger, and no longer scarcely with success. This spot had been no doubt for ages, and until within a few years, a place of resort, not only for deer, but for other animals of the ruminant order, such as elk, moose, &c. but as the country became populated by settlers, no traces of these animals (except the deer) were left, other than here and there a horn of an elk or moose was found, and preserved by the neighbours, and placed over their fire places, as relics of days gone by. Here, too, perhaps in ages past, the Mastodon in his majesty and strength strode with giant step, uninterrupted in his course, the monarch and terror of this then unknown wilderness.

I had frequently in my hunting excursions, steered my course for these springs in the same track which I took on the above period, and mostly killed one or two deer before I reached my destined spot, but always depended more on my success when laying in ambush behind my favourite logs near the spring, where I had for years killed many deer.

The season, however, of watchfulness commenced usually at twilight in the evening, as these animals seldom wandered before that period, and as moonlight nights were preferable for these ruminants to browse, and visit the salt licks, it was not only more interesting to lay in ambuscade for them, but insured a greater degree of success, and it frequently happened, that when they visited the springs undisturbed,

they would remain within a short circle of this spot, feeding on the buds and variety of herbs about it, until the approach of dawn, when, instead of departing for other places, they would make their lair in the immediate neighbourhood until the next evening. Under these circumstances, I often very cautiously approached the favoured spot, and surprised several deer during the day time, and seldom returned without killing one, and sometimes more—hence my reason for making it an invariable rule during my excursions to visit the springs. At the salt lick there was a particular spot more visited than all others by the deer, and into this, within a circle of twelve feet, I had, in five successive seasons, shot eighty-three deer, most of which fell within these bounds; and in order to allow for the variable winds, and prevent the animals from scenting me, I had three logs in different positions, behind which I would ensconse myself and there await the approach of the unsuspecting game. On the day of my present adventure I had kept the summit of the mountain for several miles, without success, for a breeze had arisen shortly after sun rise which rattled through the trees, and made it unfavourable for hunting on high ground, and indeed the only wild animal I saw, was a bear, that was feeding on another ridge across a deep valley, and entirely out of reach of my rifle shot; I therefore descended the mountain in an oblique direction, towards the salt springs which I soon reached, and after finding others had preceded me here, I left the spot for another mountain on which I intended to pass the remainder of the day, gradually working my way home. This mountain was covered with chesnut trees, and here it was, that I caught a glimpse of the bear, from the other ridge, and found he had disappeared but a short time previous to my arrival on this mountain; I followed his track for three miles, for chesnuts lay in abundance on the ground, and bears, like hogs, root up the leaves in search of food beneath, and it no doubt had lingered about here eating its food until my near approach gave warning of its danger; this I could discover, as the leaves having been wet by the melted frost on the top, a path could be traced where the bear in running had turned the dried part of the leaves uppermost. I quickened my pace along the mountain side and around the turn of the mountain, with the hopes of surprising the bear, and after a rapid chase for the distance above mentioned, all proved fruitless and I relinquished further pursuit. Warm with this exercise, and somewhat fatigued, I descended the mountain side, and took my seat beside a stream of water which gently washed the base of the mountain, and emptied itself in the head waters of the Susquehannah.

It was now mid-day, and the sun shone, unobstructed by clouds, on the beautiful sheet of transparent water, which flowed its murmuring ripples at my feet. This stream was the outlet of a small but beautiful lake, which lay embedded between two lofty mountains, crowned with the variegated tints of the autumn, while on the unruffled bosom of the lake, as on a glassy mirror the dazzling brightness of the noon-day sun, glistened with peculiar lustre, and gave additional interest and beauty to the golden crowned hills, which towered their lofty summits toward the heavens.

I sat eating chesnuts, with my rifle by my side, and amusing myself with the shoals of little minnows, which kept edging their noses against the current; I would chew my chesnuts into crumbs, throw to them, and be delighted at their graceful dexterity, in securing the scattered fragments as they floated swiftly down the stream—then again I watched the eagles' flight, as with outstretched pinions, he soared majestically above the hills, with that independence and grandeur which rank him king of birds—and then I raised my eyes to the mountain tops, and wondered whether these were among the everlasting hills, which nature, in her chaotic movements, raised from the waters, and stamped on them a duration coequal with time. While thus communing with nature, my mind was insensibly borne from the object which first led me from my home; for what reflecting mind can behold the surrounding beauties in the wilds of the forest, which are intruded on his sight whithersoever he turns his head, without having imparted to his feelings the serenity and sublimity, which ever there abide during the autumnal season of the year; the only noise which strikes the ear, is the gurgling brook, which unceasingly runs its troubled course, or the hollow roaring of some distant waterfall, sometimes loud, and again dying gently into stillness, as the passing zephyrs may vary or waft it to the ear; or the mournful sounds of the northern breezes when agitating the forests, and whirling the sear and yellow leaves from their parent stems, and singing mournfully, the requiem of the departing beauties of the vegetable world; who, amid all these, solitary and reflecting, but may be led on by a train of thought, until his mind is involved in that deep contemplation from which it requires more than ordinary means to extricate it. This was my state, until I was aroused from my reverie by that which comprises the chief part of my adventure.

I had remained sitting on a fallen tree, whose branches extended considerably into the water, for perhaps an hour and a half, when of a sudden I heard a rustling among the leaves on the mountain immediately above my head, which at first was so distant, that I thought it merely an eddy of the wind, whirling the leaves from the ground, but it increased so rapidly, and approached so near the spot where I sat, that I instinctively seized my rifle, ready in a moment to meet any emergency which might offer.

That part of the mountain where I was seated, was covered with laurel and other bushes, and owing to the density

of this shrubbery, I could not discover an object more than ten yards from me: this, as will afterwards appear, afforded me protection; at any rate it conduced to my success. The noise among the leaves now became tremendous, and the object approached so near, that I distinctly heard an unnatural, grunting noise, as if from some animal in great distress. At length, a sudden plunge into the water not more than twenty yards from me, uncovered to my view a full grown black Bear, intent upon nothing but its endeavours to press through the water and reach the opposite shore. The water on an average was not more than two feet deep, which was not sufficient for the animal to swim, and too deep to run through; consequently the eagerness with which the bear pressed through the water, created such a splashing noise, as fairly echoed through the hills. Without scarcely a thought, I brought my rifle to my shoulder with the intention of shooting, but before I could sight it correctly, the bear rushed behind a rock which shielded it from my view; this gave me a momentary season for reflection, and although I could have killed the bear so soon as it had passed the rock, I determined to await the result of such extraordinary conduct in this animal; for I was wonder struck at actions, which were not only strange, but even ludicrous: there not appearing then, any cause for them. The mystery however was soon unravelled.

The stream of water was not more than ten rods in width, and before the bear was two-thirds across it, I heard another rustling, on the mountain side, among the leaves, as if by jumps, and a second plunge into the water convinced me that the bear had good cause for its precipitation; for here, pressing hard at its heels, was a formidable antagonist in an enormous Panther, which pursued the bear with such determined inveteracy, and appalling growls, as made me shudder, as with a chill. I was completely taken by surprise, and aroused from my reverie, relaxed in nerve, and with that lassitude of feeling as when struggling in a dream with some hideous monster, from which you endeavour to escape, and by the energies of your mind awake, and feel unnerved and helpless by the excitement, and transit from one state of feeling to another: so was it with me. I had been calmly enjoying the solitude of the place, and beguiling one fleeting hour in the enjoyment of its beauties, and my state of feeling was as contrary as possible to what it should have been, to enable me to encounter successfully a scene like that just described; but had my feelings been other than they were, I might have laid the panther sprawling in the water, and relieved the bear from the horrors of a death, which he seemed well aware awaited him, without the possibility of escape, but in my surprise and stupefaction of the moment, I was deterred from doing that which would have prevented me from witnessing a scene I never can forget, and which demonstrated with such terrible effects, the revengful disposition of an infuriated monster.

The panther plunged into the water not more than eighteen or twenty yards from me, and had it been but one-third of that distance, I feel convinced, I would have been unheeded by this animal, so intent was it on the destruction of the bear. It must indeed be an extraordinary case which will make a panther plunge into water, as it is a great characteristic of the feline species always to avoid water, unless driven to it, either by necessity or desperation; but here nature was set aside, and some powerful motive predominated in the passions of this animal, which put all laws of instinct at defiance, and unlike the clumsy hustling of the bear through the water, the panther went with bounds of ten feet at a time, and ere the former reached the opposite shore, the latter was midway of the stream. This was a moment of thrilling interest, and that feeling so common to the human breast, when the strong is combating with the weak, now took possession of mine, and espousing the cause of the weaker party, abstractedly from every consideration of which was in the wrong, I could not help wishing safety to the bear, and death to the panther, and, under the impulse of these feelings, I once more brought my rifle to my shoulder, with the intention of shooting the panther through the heart, but in spite of myself, I shrunk from the effort, —perhaps it was well I reserved my fire, for had I only wounded the animal, I might have been a victim to its ferocity.

So soon as the bear finding there was no possibility of escape from an issue with so dreaded an enemy, than, on reaching the opposite bank of the stream, it shook the water from its hair like a dog, and ran about fifteen feet on the bank, and laid directly on its back in a defensive posture; this it had scarcely done, when the panther reached the water's edge, and then with a yell of vengeance, it made one bound, and sprang with outstretched claws and spitting like a cat, immediately on the bear, which lay in terror on the ground, ready to receive its antagonist; but the contest was soon at an end. Not more easily does the eagle rend in sunder its terror stricken prey, than did the enraged panther tear in scattered fragments, the helpless bear; it appeared but the work of a moment, and that moment was one of unrelenting vengeance, for no sooner did the panther alight on its victim, than with the most ferocious yells, it planted its hinder claws deep in the entrails of the bear, and by a few rips, tore its antagonist in pieces. Although the bear was full grown it must have been young, and in want of energy, for it was so overcome with dread, as not to be able to make the least resistance.

Satisfied in glutting its vengeance, the panther turned

from the bear, and came directly to the water's edge to drink, and allay the parching thirst created by so great excitement, after which it looked first down and then up the stream, as though it sought a place to recross, that it might avoid the water, and then, as if satiated with revenge, and enjoying its victory, stood twisting and curling its tail like a cat, and then commenced licking itself dry. The animal was now within thirty-five yards of me, and seeing no prospect of its recrossing the stream, I took rest for my rifle on a projecting limb of the tree on which I still sat, and fired directly at the panther's heart. The moment I discharged my rifle, the monster made a spring about six feet perpendicularly, with a tremendous growl, which reverberated among the rocks, and fell in the same spot whence it sprang, with all its legs extended, and lay in this situation, half crouched, rocking from side to side, as if in the dizziness of approaching death. I saw plainly that my fire was fatal, but I had too much experience to approach this enemy, until I could no longer discover signs of life. I therefore reloaded my rifle, and with a second shot, I pierced immediately behind the ear; its head then dropped between its paws, and all was quiet. My next difficulty was to cross the stream, as I did not like to wade it, unless every other means to gain the opposite shore should fail; I accordingly walked a considerable distance down the stream, and was fortunate enough to cross, by means of a fallen tree, against which a large quantity of drift-wood had lodged, and formed a complete bridge. On my approach to the dead animals, I felt an involuntary restraint against going too near them, for although I had the plainest demonstration that both were dead, yet the scene of strife I had witnessed, its unexpected, fatal, and sudden termination, had so involved my feelings in tremor, that I could not divest myself of a cowardly fear, which indeed too many feel under less terrifying circumstances, but have not candour enough to acknowledge it.

Perhaps, too, my success in destroying the panther contributed to the excitement. However, after a short interval, my calmness and nerve returned, and I took a survey of the late belligerents. I gave but a momentary glance at the panther, which lay perfectly dead on its belly, with the legs and claws fully extended, and griped firmly in the earth. The bear lay about twenty-five feet up the bank, dead, yet bleeding, and with its entrails torn completely from the abdomen, presented a most pitiful appearance, and displayed, with horrid aspect, the ferocious energies of its powerful antagonist, when roused to madness and revenge; but how inferior in all their terrors, are the natural strength and ferocity of the most dreaded wild animals, to the physical and mental powers of man. In the present instance, the victor had breathed but a few pulsations after the strife, ere, by the wonderful invention of the rifle, it was hushed in death forever.

To me, the cause of this battle was, and must forever remain a mystery. I spent much time on the spot endeavouring to account for the cause, and the only good reason I can give, I obtained by inference and circumstantial evidence.

On examining the panther, no marks of violence appeared, except, where my rifle balls had passed completely through, within a foot of each other, but on turning the animal on its back, I discovered it to be a female, and a mother, and, by the enlargement of her teats, had evidently been suckling her young. From this circumstance, I supposed the bear had made inroads upon her lair, and more than probable destroyed her kittens. I was the more convinced of this, from the fact, that I never knew from my own experience, nor could I gather from the oldest hunters among my acquaintance, an instance wherein a panther and a bear came in collision with each other, or enter into deadly strife; and again, no circumstance but the above, would be sufficient to awaken that vindictive perseverance in the passions of a panther, which would lead to the annihilation of so formidable an animal as a bear. Under these views, I feel satisfied that my inference was correct.

It was now nearly five o'clock, and the sun was sinking fast behind the western hills, and the valleys already began to wear a sombre aspect from the broad shadows of the mountains. I had upwards of seven miles to retrace my steps, and one-third of this distance was up a rugged and lofty mountain; and bidding adieu to the manes of these departed worthies, and leaving them where many a warrior has been left—on the field of battle—I sought my home with rapid strides, satisfied that as a hunter, I had passed an eventful day; and although I might have killed on my return to my habitation, towards the approach of evening several deer, yet after my success, and the magnitude of my adventure, they appeared so innocent, and trifling in my sight, that I thought it unworthy of my skill to shoot them, and therefore let them pass; and my mind being so filled with the scenes of the day, that time and distance passed unheeded, and shortly after dark I reached my home, welcomed by a watchful and solicitous family. M.

Philadelphia, Dec. 1831.

A PARTY of gentlemen, in Belchertown, Mass. held a hunt recently, for squirrels, rabbits, woodpeckers, and owls.—The party was divided into two sets of twenty each. After the day's hunt the game was counted, and the result of the sport announced. One side counted 433, and expected to win, but it was soon announced that the other side counted precisely the same number; of course the supper, &c. which seems to have been the prize contended for, was paid for mutually.—*Am. Turf Reg.*

TO A WILD DEER.

A FINE live Deer was run down recently in the borough of Columbia, Lancaster county. It is supposed that it was driven in by some of the neighbouring dogs, and when taken was much exhausted.

Why didst thou leave thy native woods,
Child of the forest! here to roam,
And quit the murmur of the floods
That revel in thy mountain home?
Why did'st thou thus resign thy glen
To die amid the haunts of men?

There's freedom on the rocks and hills,
A liberty that nature gives,
Whose very inspiration fills
The heart of every thing that lives,
And seems to throw a noble air
O'er every form that wanders there.

Nay, e'en the very trees that rear
Their branches to the summer sky,
In their wind-shaken leaves appear
To have a sense of majesty,
And lift their heads as though they felt
They grew in scenes where freedom dwelt.

There couldst thou lift thy antlered brow,
And pace the wilds in conscious pride,
Climbing the steeps where wild flowers grow,
Or plunging in the torrent's tide,
Daring alike to scale or swim,
With eye unmoved and dauntless limb.

The crags and peaks were all thine own,
The rivers and the rocks were thine,
Thou wert a monarch on thy throne,
Treading the cliffs where sun-beams shine;
The monarch of the hills wert thou—
Chief of the proud and antlered brow!

Along the misty valley's shade
Thy footstep roamed at break of morn,
The echoes of thy native glade
Ne'er heard the clang of hound or horn.
The blackbird's note, the wolf's loud bay
Were all that met thee on thy way.

Wild nature was around thee there
In all its rich, romantic grace;

It seemed as though the very air
Partook the spirit of the place;
Whate'er it was in other eyes,
To thee it seemed a paradise.

Then why did'st thou forsake thy wild,
Amid the haunts of men to stray?
The rocks that on thy hills are pil'd
Are not more hard—more bleak than they.
Thou'st come from sunny glen and sky,
By human hearths at last to die!

Like thee, poor deer! when genius leaves
The quiet home it once had known,
And from the ingrate world receives
The meed of cold neglect alone,—
Like thee it turns away in pain,
And wishes for the shades again.

C. W. T.

GENTLEMEN:

I observed in one of your Nos. of the Cabinet, an account of an attempt to domesticate the Partridge. If an attempt of a similar kind, though not of equal success, made by myself, *with the common Quail*,* during the fall and winter of 1830, is of any service to your work, you have my entire liberty to use it. I had been passing a few weeks in the country, about fifteen miles from this city, and was out one morning in pursuit of woodcock, when my dog came upon a dead point, in an open meadow, upon a bird not twelve feet beyond him. Surprised at the apparent tameness or stupidity of the bird, I approached with a view of taking it, if possible, alive; and I was able to advance within about six feet of her, before she flew. I then perceived it was a Quail upon her nest, which contained fifteen young, apparently not more than a day old. I thought this would be an excellent opportunity of making an experiment I had long wished for—of domesticating the Quail; and, therefore, notwithstanding my compunctions of conscience in thus bereaving the distressed mother of her offspring, I took them up, nest and all, and carried them home, accompanied by their mother, who was continually uttering the most violent outcries, as if to reproach me with my cruelty. When I arrived at home I put the nest, with all its contents, in a large cage, and suspended it from a limb of an apple tree, out of the way of cats and other enemies of the feathered tribe. I then retired to a distance, leaving the door of the cage open, for the purpose of observing, whether the mother would

* One is the Quail of the North, and the other the Partridge of the South.

enter to feed her young, or desert them entirely; the moment I was out of sight, she flew on the top of the cage, looking down through the wires with the greatest apparent agony, and making every attempt to get through; at last, having succeeded in finding the door, she entered, and having caressed them for a few moments, she flew off for food, but soon returned, and became apparently well pleased with her new residence, where she remained the whole of that day and night, and part of the next; then she was seen no more; whether she was killed, or sacrificed her offspring to the fears for her own safety, I know not, but after waiting till night-fall, without seeing or hearing from her, I took the fifteen young Quails under my own care. They bore the closest possible resemblance to chickens, and had all the manners of chickens, the same chirp, and in a day or two the same way of pecking when let into the yard; their food, for the first day or two, was given them in small pills of the size of a pea, and consisted of dough; in three days from the time they were taken, they fed themselves in the manner of fowls; *one*, the largest, and apparently the oldest, acting as leader or father of the flock, which they followed as young chickens do a mother. Their extreme youth when taken, and the manner of their bringing up, had obliterated all recollection of their mother, and destroyed all fear of man, they ran to me at the sound of my voice as they would to the call of their own parent. I kept them now in a box lined with raw cotton, they grew and prospered wonderfully, being extremely lively, and always washing and dressing themselves when the sun was warm, and being much tamer than young chickens. I kept them in this way for six weeks, till the nights became quite cool, when it being impossible to supply the natural warmth of their mother by cotton, one cold night killed eight of them. I then placed the box on a warm stove, which would preserve the heat very well during the day and the early part of the night, but it being impossible to keep it exactly regulated all night, the cold again affected them, and one by one they died. If I had taken them in the spring, instead of the fall, I have no doubt my experiment would have succeeded.

With great respect,

ONE OF YOUR SUBSCRIBERS.

Boston, Dec. 19th, 1831.

UNITED BOWMEN.

Messrs. Editors,

I have promised you a notice for one of your Nos. of the annual meeting of the United Bowmen, for the purpose of trying their skill in competition for the prize of 1831; and you have compelled me to keep that promise. I am sorry for it, for two reasons; the first is—but I must get at that, by giving you a little incident, in the form of a dialogue, in which you may consider the party called Tom as myself.

"Uncle, did you see that star shoot just now?

No, my boy.

Do stars turn round, uncle?

No, Tom, the earth turns round.

Don't it turn round like a top, uncle?

Something like a top, Tom.

Well, uncle, mother gave me a top to-day for being at the head of the class."

Now its out; I got the prize myself, and did not know how to say so. So much for the first; the second is easy enough to tell.

The shooting was so bad, that we don't relish the idea of its going into print; to these two reasons for reluctance, a word of apology may be edged in, as "a plea in mitigation of damages," as our friend △ would say in court; and that is, a prize shooting always results in a worse display of skill than any other time. Allow me to say for my competitors, while I am apologizing, that I did not get the prize for shooting *better* than they did, but because I did not shoot quite *so bad*. Let me also remark, that some of the gentlemen engaged in this contest, had never drawn a bow but at one or two practisings, in anticipation of this meeting. Let this fact account for the registry of two, three, and five hits, as reported hereafter.

The report of the captain of the target for that day, contains all of interest in connection with the subject. I shall copy it for the information of your readers.

"In compliance with the duties that have devolved on me as captain of the target, on the twenty-fourth day of September, I proceed to lay before you the result of the contest on that day. It is the fourth annual meeting for the purpose of testing the skill of the members of our association, and rewarding its successful demonstration. I cannot resist the expression of the high degree of satisfaction that I have experienced, for three successive years, in acting as your captain, on a day of so much interest and excitement in witnessing the great urbanity of deportment that has existed at each of these contests; the more remarkable in consequence of the keen rivalship so honourable to zealous archers. This spirit has prevailed so fully, that the office which I have held has been nearly a nominal one; that of umpire and register altogether unnecessary, and being so, I judged it useless to tax any of our friends with the apparent responsibility."

The day selected for the trial was ushered in by gentle

breezes from the south west, attended by a thin veil of clouds. The breeze died away by two o'clock, P. M. leaving us the afternoon free alike from sun or wind.

The ground was measured, targets placed, ropes adjusted, and all other duties performed, by the various squads detailed for those purposes, the roll called, and the regulations read previous to three o'clock, precisely at which time the shooting commenced.

It is not a little amusing to witness the varied expressions of the different individuals, when they take their places on the stand; their gentlemanly deportment, to which I have before alluded, prevents all further demonstration of their feelings than that which is evinced by the compressed or quivering lip, or the bent brow; and towards the conclusion when so much depends on firmness, the determination to subdue the trembling of anxiety, so fatal to success in our pleasing but difficult art.

We would not envy that man's feelings, though he should win the prize, who could be insensible to the reflection, that some heart in the neighbouring group, was then beating responsive, with pulsations more anxious than his own, that those bright eyes would follow, and fain direct, the quivering arrow as it flew, and those lips that are for us such kind advocates, were then breathing, a gentle prayer for our success; he that could not feel under such circumstances, let him be for ever unblest, and let his arrow, like the seventh bullet of the wild huntsman, recoil upon himself.

This is not all fancy, for the excitement of the occasion has, nearly in every case, prevented that successful demonstration of skill, so desirable for a prize contest. The following is the number and value of the hits of each competitor, and in the order in which they are enumerated:

1st		20 hits value		66	
2		13	" "	41	
3		6	" "	14	
4		9	" "	23	
5		12	" "	34	nearest to centre.
6		3	" "	11	
7		9	" "	27	
8		2	" "	4	
9		5	" "	13	
		79		233	

By which it will be seen that was entitled to the first prize, which was accordingly presented to him by

The secondary prize, it will also be seen, was won by the twice lucky

There were but three hits in the Gold during the afternoon, and, as a curious coincidence, let me remark, that like the last year held his post nearest to the centre until late in the afternoon, when he was displaced, by the same fortunate hand that had snatched, in the former year, not the CUP from his lip, but the BUCKLE from his BELT.*

The time of shooting was two hours precisely, and the distance eighty yards.

It would be great injustice to pass without notice, the handsome style of the new members of the Club, in the manner of discharging their arrows; it was difficult for those that knew them not, to say which were the oldest, or which the youngest archers.

In conclusion, Messrs. Editors, let me, in personal vindication, remark, that although I have sent you the most egotistical communication you have ever published, yet I am really the most modest man in the Club, with a single exception, and he is the

Yours, truly,

* Alluding to the form of the prizes.

ON BAD PRACTICES AMONG SPORTSMEN.

Messrs. Editors.

BEING nothing better than a *gunner*, it will hardly be expected that I should be much accustomed to writing moral essays; but were that the case, and my capability unquestionable, it might still be doubted whether the columns of a work like yours, are the most fit in the world to make an exhibition of my talent. I am no great lecturer on morality; nor do I wish to be too fastidious in criticising the habits and manners of my brother sportsmen, yet I cannot help thinking there are some practices among them, which might be amended, and a few perhaps entirely omitted, without taking from their characters as *choice spirits*, or diminishing in any degree the pleasures of their *pursuits;* and, therefore, as in general they have but little morality in the field, I will, with your permission, give them a smattering of it in the closet.

It has been said, and the saying has been ten thousand times quoted that, "No man is a hero to his valet de chambre;" and as I have no pretensions to the character of a hero, nor yet filled the situation of a valet, (though heaven alone knows what any of us may come to), I am unable to vouch for the truth of this doctrine; but I can certainly see no reason why a sportsman should not be a gentleman even to his dog.

Of what use therefore, is it to *'damn'* a dog for every fault he commits? To hie him on! to call him back! or to bring him to the down charge! in the language of a blackguard! And what good purpose can it possibly answer, to correct him for an ordinary error, in a speech garnished with oaths of such vulgar grossness, as would disgrace the most abandoned of the inhabitants of Bridewell?

I was once acquainted with an old gunner, who, though

he laid no claim to the refinements of gentility, acted upon such occasions, if not more rationally, at least in a much less disgusting manner than many of our high bloods, and would-be tip-top sportsmen. Whenever his dog behaved amiss, he would call him in, and, taking him by the ears, give them a reasonable shaking (not too hard, for he loved him as the apple of his eye) and in a tone of voice between anger and affection, address him somewhat after the following manner: "Come in here, Pluto! why dont you mind? Here I've been calling you these ten minutes! you ought to know there was no game there! I told you so before; but you've got so now you wont mind me at all. There's plenty of work for you to do where there's game, and here you are running about where there is'nt a bird; tiring yourself all for nothing; and lame as you are too. Do you think your foot will ever get well if you go on so? you foolish fellow. You'll be knock'd up before night, and to-morrow you wont be able to hunt at all. Now go along with you! and mind what you're about; or else I'll serve you a good deal worse next time, you'll see if I dont. Hie on, sir."

This simple hearted old man, to be sure treated his dog as though he was a biped of his family, reasoning with him like a rational creature; and, for ought I know, the animal understood him well enough, too, for there seems no reason why a brute should not understand remonstrance as well as low-lived abuse; and I certainly think my old friend's method liable to less objection than the other.

I know that dogs are sometimes unruly, and act in a manner calculated to try the patience, but such of them as do so constantly, are not worth keeping; and a man had better part with a bad dog, than acquire a bad habit. If gentlemen will be at more pains to procure the best blooded animals, and have them well broke before they take them out for regular hunting, few occasions of exciting their wrath will occur, and a great deal of breath may be husbanded for the day's work which is generally wasted in abusing their dogs. Besides a sportsman ought never to be in a passion. Philosophical coolness should characterize his conduct in the field, particularly in relation to his dogs, who are often made unsteady by the violent manner in which they are corrected for errors real or supposed. I say *supposed*, because it not unfrequently happens, with the younger class of gunners, that the master is more in fault, than his dog. I knew an instance of a gallant of this stamp, swearing himself hoarse at a pointer that was out of sight, when, upon advancing a few yards farther into the cover, the dog was discovered standing to a brace of woodcock.

I trust, that this admonition against the absurd and ungentlemanly vice of swearing, in connection with sporting transactions, will be taken in good part by my fellow-sinners, (for I have been a sad delinquent that way myself,) and produce reformation in some of them; as it will, by no means, lessen their enjoyments, and add much to their respectability.

I remain, gentlemen, yours, &c.

D. J.

New York, July, 1831.

SAGACITY OF BEES.

The following anecdote is extracted from a letter from a farmer in Pennsylvania, to a friend in England:

"The sagacity of these animals, which have long been the tenants of my farm, astonishes me; some of them seem to surpass even men in memory and sagacity. I could tell you singular instances of that kind. What then is this instinct which we so debase, and of which we are taught to entertain so diminutive an idea? My bees, above all other tenants of my farm, attract my attention and respect. I am astonished to see nothing exists but what has its enemy; one species pursues and lives upon the other. Unfortunately our king birds are the destroyers of these industrious insects: but, on the other hand, these birds preserve our fields from the depredations of crows, which they pursue on the wing with great vigilance and astonishing dexterity. —Thus divided by two interested motives, I have long resisted the desire I have to kill them, until last year, when I thought they increased too much, and my indulgence had been carried too far. It was at the time of swarming, when they all came and fixed themselves on the neighbouring trees, whence they caught those bees that returned loaded from the field. This made me resolve to kill as many as I could, and I was just ready to fire, when a bunch of bees, as big as my fist, issued from one of the hives, rushed on one of these birds, and probably stung him, for he instantly screamed, and flew, not as before, in an irregular manner, but in a direct line. He was followed by the same bold phalanx, a considerable distance, which unfortunately becoming too sure of victory, quitted their military array, and disbanded themselves. By this inconsiderate step, they lost all that aggregate of force which made the bird fly off. Perceiving their disorder, he immediately returned, and snapped as many as he wanted; nay, he had even the impudence to alight on the very twig from which the bees had driven him. I killed him, and immediately opened his craw, from which I took 171 bees. I laid them all on a blanket, in the sun, and, to my great surprise, 54 returned to life, licked themselves clean, and joyfully went back to the hive; where they probably informed their campanions of such an adventure and escape, as I believe had never happened before to American bees!"

SPORTING WITH HUMANITY.

THE following narrative is extracted from the journal of a British officer who served under the Duke of Wellington, at the time of Massena's memorable retreat from before Lisbon.

"The French army had long suffered terrible privations. We all knew that Massena could not much longer retain his position, and the "Great Lord" (so the Spaniards call Wellington) allowed famine to do the work of a charge of bayonets. Our army was weary of the lines. It felt as if cooped up by an enemy it yet despised, and would have gladly marched out to storm the formidable French encampment; and such was the first idea that struck many of us, when, on the 5th of March, the army was put in motion, and the animating music of the regimental bands rang through the rocky ridges of Torres Vedras. But it was soon universally understood, that the French were in full retreat; there was now no hope of a great pitched battle, and all that I could expect was, that as our regiment formed part of the advance, we might now and then have a brush with the rear-guard of the French, which was, you know, composed of the flower of the army, and commanded by Michael Ney, the 'bravest of the brave.'

"I will give you, in another letter, an account of the most striking scenes I witnessed during the pursuit after our ferocious enemy. They had been cheated out of a victory over us,—so they said, and so in Gallic presumption, they probably felt,—when, some months before, Massena beheld that army which he threatened to drive into the sea, frowning on him from impregnable heights, all bristling with cannon. Instead of battle and conquest, and triumph, they had long remained in hopeless inactivity, and at last, their convoys being intercepted by the guerillas, they had endured all the intensest miseries of famine. Accordingly, when they broke up, the soul of the French army was in a burning fever of savage wrath. The consummate skill of their leaders, and the unmitigated severity of their discipline, kept the troops in firm and regular order; and certainly, on all occasions, when I had an opportunity of seeing the rear-guard, its movements were most beautiful. I could not help admiring the mass moving slowly away, like a multitude of demons, all obeying the signs of one master spirit. Call me not illiberal in thus speaking of our foe. Wait till you hear from me a detailed account of their merciless butcheries, and then you will admit, that a true knight violates not the laws of chivalry in uttering his abhorrence of * * * * * * . The ditches were often literally filled with clotted and coagulated blood, as with mire—the bodies of peasants, put to death like dogs, were lying there horribly mangled; little naked infants, of a year old, or less, were found besmeared in the mud of the road, transfixed with bayonet wounds, and in one instance, a child, of about a month old, I myself saw with the bayonet left still sticking in its neck; young women and matrons were found lying dead with cruel and shameful wounds; and, as if some general law to that effect had been promulgated to the army, the priests were hanged upon trees by the road side. But no more of this at present.

"I wish now to give you some idea of a scene I witnessed at Miranda do Cervo, on the ninth day of our pursuit; yet I fear that a sight so terrible cannot be shadowed out, except in the memory of him who beheld it. I entered the town about dusk. It had been a black, grim, and gloomy sort of a day—at one time fierce blasts of wind, and at another perfect stillness, with far-off thunder. Altogether there was a wild adaptation of the weather and the day to the retreat of a great army. Huge masses of clouds lay motionless on the sky before us; and then they would break up suddenly, as with a whirlwind, and roll off in the red and bloody distance. I felt myself, towards the fall of the evening, in a state of strange excitement. My imagination got the better entirely of all my other faculties, and I was like a man in a grand but a terrific dream, who never thinks of questioning any thing he sees or hears, but identifies all the phantasms around with a strength of belief, seemingly proportioned to their utter dissimilarity, to the objects of the real world of nature.

"Just as I was passing the great Cross in the principal street, I met an old haggard looking wretch—a woman, who seemed to have in her hollow eyes an unaccountable expression of cruelty—a glance like that of madness; but her deportment was quiet and rational, and she was evidently of the middle rank of society, though her dress was faded and squalid. She told me (without being questioned) in broken English, that I would find comfortable accommodation in an old convent that stood at some distance, among a grove of cork trees; pointing to them at the same time with her long shrivelled hand and arm, and giving a sort of hysteric laugh. You will find, said she, nobody there to disturb you.

"I followed her advice with a kind of superstitious acquiescence. There was no reason to anticipate any adventure or danger in the convent; yet the wild eyes and the wilder voice of the old crone powerfully affected me; and though, after all, she was only such an old woman as one may see any where, I really began to invest her with many imposing qualities, till I found that, in a sort of reverie, I had walked up a pretty long flight of steps, and was standing at the entrance of the cloisters of the convent. I then

saw something that made me speedily forget the old woman, though what it was I did see, I could not, in the first moments of amazement and horror, very distinctly comprehend.

"Above a hundred dead bodies lay and sat before my eyes, all of them apparently in the very attitude or posture in which they died. I looked at them for at least a minute, before I knew they were all corpses. Something in the mortal silence of the place told me that I alone was alive in this dreadful company. A desperate courage enabled me then to look stedfastly at the scene before me. The bodies were mostly clothed in mats and rugs, and tattered great-coats; some of them merely wrapped round with girdles of straw; and two or three perfectly naked. Every face had a different expression, but all painful, horrid, agonized, bloodless: many glazed eyes were wide open; and, perhaps, this was the most shocking thing in the whole spectacle. So many eyes that saw not, all seemingly fixed upon different objects; some cast up to heaven, some looking strait forward, and some with the white orbs turned round, and deep sunk in the sockets.

"It was a sort of hospital. These wretched beings were mostly all desperately or mortally wounded; and after having been stripped by their comrades, they had been left there dead and to die. Such were they, who, as the old hag said, would not trouble me.

"I had begun to view this ghastly sight with some composure, when I saw, at the remotest part of the hospital, a gigantic figure sitting, covered with blood, and almost naked, upon a rude bedstead, with his back leaning against the wall, and his eyes fixed directly on mine. I thought he was alive, and shuddered; but he was stone dead. In the last agonies he had bitten his under lip almost entirely off, and his long black beard was drenched in clotted gore, that likewise lay in large blots on his shaggy bosom. One of his hands had convulsively grasped the wood-work of the bedstead, which had been crushed in the grasp. I recognised the corpse. He was a serjeant in a grenadier regiment, and, during the retreat, distinguished for acts of savage valour. One day he killed, with his own hand, Harry Warburton, the right hand man of my own company, perhaps the finest made and most powerful man in the British army. My soldiers had nick-named him with a very coarse appellation, and I really felt as if he and I were acquaintances. There he sat, as if frozen to death. I went up to the body, and raising up the giant's muscular arm, it fell down again with a hollow sound against the bloody side of the corpse.

"My eyes unconsciously wandered along the walls. They were covered with grotesque figures and caricatures of the English, absolutely drawn in blood. Horrid blasphemies, and the most shocking obscenities in the shape of songs, were in like manner written there; and you may guess what an effect they had upon me, when the wretches who had conceived them lay all dead corpses around my feet. I saw two books lying on the floor; I lifted them up; one seemed to be full of the most hideous obscenity; the other was the Bible. It is impossible to tell you the horror produced in me by the circumstance. The books fell from my hand; they fell upon the breast of one of the bodies; it was a woman's breast. A woman had lived and died in such a place as this! What had been in that heart, now still, perhaps only a few hours before, I knew not. It is possible, love, strong as death; love, guilty, abandoned, depraved, and linked by vice unto misery: but still love, that perished but with the last throb, and yearned in the last convulsion towards some one of these grim dead bodies. I think some such idea as this came across me at the time; or has it now only arisen?

"Near this corpse lay that of a perfect boy, certainly not more than seventeen years of age. There was a little copper figure of the Virgin Mary round his neck, suspended by a chain of hair. It was of little value, else it had not been suffered to remain there. In his hand was a letter; I saw enough to know that it was from his mother;—*Mon cher fils, &c.* It was a terrible place to think of mother—of home—of any social human ties. Have these ghastly things parents, brothers, sisters, lovers? Were they once all happy in peaceful homes? Did these convulsed, and bloody, and mangled bodies once lie in undisturbed beds? Did those clutched hands once press in infancy a mother's breast? Now all was loathsome, terrible, ghostlike. Human nature itself seemed here to be debased and brutified. Will such creatures, I thought, ever live again? Why should they? Robbers, ravishers, incendiaries, murderers, suicides, (for a dragoon lay with a pistol in his hand, and his skull shattered to pieces,) *heroes!* The only two powers that reigned here were agony and death. Whatever might have been their characters when alive, all faces were now alike. I could not, in those fixed extortions, tell what was pain from what was anger—misery from wickedness.

"It was now almost dark, and the night was setting in stormier than the day. A strong flash of lightning suddenly illuminated this hold of death, and for a moment showed me more distinctly the terrible array. A loud squall of wind came round about the building, and the old window casement gave way, and fell with a shivering crash in upon the floor. Something rose up with an angry growl from amongst the dead bodies. It was a huge dark-coloured wolf dog, with a spiked collar round his neck; and seeing me, he leaped forwards with gaunt and bony limbs. I am confident that his jaws were bloody. I had instinctively moved

backwards towards the door. The surly savage returned growling to his lair; and, in a state of stupefaction, I found myself in the open air. A bugle was playing, and the light infantry company of my own regiment was entering the village, with loud shouts and hurras.—*London Sporting Magazine.*

DISEASES OF DOGS.

Wild animals, reclaimed from a state of nature and domesticated, are susceptible of great change and variety in form, colour, and character; and owing, no doubt, to being thus compelled to assume in some degree, an artificial mode of life, they are rendered more liable to disorders. Animals in a state of nature are little subject to disease: and though the wild Dog subsists on flesh and carrion, it is more than probable he is never troubled with what is distinguished by the appellation of the *distemper*, or any of that long catalogue of disorders, to which the Dog is rendered obnoxious after having become the companion of man. However, thus much may be truly observed, that if a Dog be properly fed and exercised, has plenty of good clean water, and his bed kept clean, he will not in general be much troubled with disease; and this rule will be found to obtain more particularly if he be kept in the country.

The Distemper.—The distemper frequently attacks a Dog before he has attained his first year. As a preliminary observation, it may be remarked, that the same membrane which lines the nostrils extends down the windpipe into the lungs; and the distemper, in the first instance, may be regarded as an inflammation of this membrane; which, if not removed, extends down to the lungs, where suppuration will soon be produced; when the animal's eye will become dull, accompanied by a mucus discharge, a cough, and loss of appetite. As the disease advances, it presents various appearances, but is frequently attended with twitchings about the head, while the animal becomes excessively weak in the loins and hinder extremities; indeed he appears completely emaciated, and smells intolerably. At length, the twitchings assume the appearance of convulsive fits, accompanied with giddiness, which cause the Dog to turn round: he has a constant disposition to dung, with obstinate costiveness or incessant purging.

On the first appearance of the symptoms which I have described, I should recommend the Dog to be bled* very freely, and his body to be opened with a little castor oil or syrup of buckthorn: this will generally remove the disease altogether, if applied the moment the first symptoms appear. If, however, this treatment should not have the desired effect, and a cough ensues, accompanied with a discharge at the nose, give him from two grains to eight of tartar emetic (according to the age and size of the Dog,) every other day. When the nervous symptoms ensue, which I have already described, external stimulants (such as sal-ammoniac and oil, equal parts,) should be rubbed along the course of the spinal marrow, and tonics given internally, such as bark, &c.

Of the various remedies, the following was given with success to a Dog, so afflicted as to be scarcely able to stand:—

Turbeth's mineral, six grains,

mixed with sulphur, and divided into three doses, one given every other morning. Let a few days elapse, and repeat the course.

Another:

Calomel, one grain and a half,
Rhubarb, five grains.

given every other day for a week.

Another:

Antimonial powder, sixteen grains,
Powdered fox-glove, one grain,

made into four bolusses with conserve of roses, and one given at night, and another the next morning, for two days.

* *Bleeding.*—In speaking on this subject, I am not supposing that the sportsman is a member of the medical profession in any of its branches, but sufficiently skilled in anatomy to know a vein from an artery, which is all the knowledge requisite for performing the operation of bleeding a Dog. A vein* may be distinguished from an artery by its having no pulsation; if an artery of any consequence shall be divided, the blood will flow in irregular gushes, it will be difficult to stop, and may cause the death of the Dog. However, there is little danger of such an unpleasant circumstance happening, and an ordinary degree of attention is quite sufficient to obviate it. The most convenient and the best place to bleed a Dog, is to open a vein, (the jugular vein,) *longitudinally*, in the side of the neck, round which a cord should be first tied; and if the sportsman is not expert at handling a lancet, he may purchase a fleam at any of the shops where surgical instruments are sold, which, by means of springs, is so contrived, that the greatest bungler need be under no apprehension. Those who sell this instrument will describe the method of using it, which indeed is so obvious at first view, as to render elucidation superfluous in this place.

If, after the vein is opened, the animal should not bleed freely, pressure a little below the orifice will cause the blood to flow. When sufficient blood has been taken, (eight ounces, if a strong Dog,) the bleeding will generally subside; should this not be the case, a little fur from a hat will stop it, or the lips of the orifice may be drawn together with a needle and thread.

The vein should be opened *longitudinally*, as I have already observed; as, if opened in a transverse direction, it may be difficult to stop the bleeding, owing to the circumstance of the incision opening every time the Dog holds down or stretches out his head.

Caustic or hot iron will stop bleeding, even when an artery is divided; or it may be sewn up.

* An artery brings the blood from the heart; a vein carries back the blood to the heart

I have known whitening administered for the distemper, a table spoonful every morning, with a little opening physic, occasionally.

I have uniformly found a complete cure effected from copious and repeated venesection in the early stage of the distemper, accompanied with a little opening medicine, syrup of buckthorn, for instance. In the kennel of Sir Harry Mainwaring, the distemper generally swept away a third of the young dogs at least. My system of treating the distemper has since been adopted with the most beneficial effect.

The following scientific description of the distemper and its mode of treatment, cannot fail to be highly interesting:

"A little black spaniel, six months old, very fat and playful, gradually became listless and irritable; his eyes suffused with water, his drooping ears, tenesmus, rough coat, dyspucea, and frequent cough, announced that the disease called the distemper was at hand. In this state he ran about for several days, when the difficulty of breathing increased. His flanks beat violently, and he showed signs of feeling great pain when his sides were pressed upon. Soon after, he became slightly convulsed, and, by his continual and melancholy cry, both day and night, proved that he was suffering from severe bodily pain. The convulsions increased, and became incessant; his debility and emaciation were daily more apparent; and at the expiration of three weeks he died.

"It must be evident that the distemper is an inflammatory disorder, more particularly affecting the mucous coats of the bronchial tubes, and that the great congestions of blood found in the heart and other vital organs must arise from the obstruction it meets with in its passage through the lungs. The particular time at which the disorganization commences, must depend on the violence of the symptoms; and it does appear that the disease can be divided into three natural stages:—

"1st. The stage of fever and general excitement.

"2d. The deposition of coagulable lymph into the substance of the lungs; and

"3d. The effusion of matter into the bronchial tubes.

"In drawing this view of the complaint, the liver is not to be overlooked; and it would seem as if this organ was, by a general irritability of the system, excited to a state of unusual activity, and that thus, by the presence of an increased and vitiated state of the bile, the stomach and bowels were brought into a disordered condition, and their villous coats inflamed.

"Upon the epidemic, contagious, or other causes predisposing to the distemper, it is not now my intention to offer any remarks; but I shall proceed to the treatment which appearances after death would indicate.

"It is unnecessary for me to add, that I have no experience of its efficacy, nor do I pretend to say that it will be successful. Indeed the object of this paper is rather to induce those who may have daily opportunities of becoming acquainted with the complaint, by observing its causes, symptoms, and progress, to form an idea of its nature; and lastly, by the operation of remedies and *frequent dissections*, to arrive at some certain conclusions.

"*Treatment.*—At the commencement of the symptoms, or during the first stage of excitement, the Dog should be bled freely, according to his age and strength. After which an emetic of tartarized antimony or ipecacuanha should be administered, and its operation promoted by mild bland fluids; moderate doses of calomel, opium, and antimony, should be given every three or four hours, and the excess of bile removed by occasional doses of castor oil. The Dog should be immersed for twenty minutes in a warm bath, rubbed dry, and placed in clean warm straw; the temperature of his apartment should be moderately warm, taking great care to exclude the cold air, which must necessarily irritate the lungs. Having continued this plan for forty-eight hours, a mixture, consisting of nitre, fox-glove, and ipecacuanha, should be given three or four times a day until the urgent symptoms have subsided. Stimulants should never be given but when the animal appears much exhausted, and after the preceding measures have been adopted: a little white wine might then be put into the gruel, which should constitute his food for the primary attack. When recovering, a little more than bread and milk or nourishing broths will be necessary.

"It occasionally happens that the irritability of the stomach is such that no medicines can be retained. Injections in these cases have been attended with beneficial effects; and therefore a solution of starch with laudanum should be thrown up several times in the course of twenty-four hours: a blister also should be applied to the region of the stomach.

"With regard to the treatment of the second and third stages, when the first has been violent and neglected, very little can be expected from medicine. Bleeding will be highly injurious; and calomel, opium, and antimony, combined with expectorants, would most probably offer the greatest prospect of success. Strength should be carefully supported by a nutritious diet, but all strong cordials ought to be avoided.

"Although it is likely the fever accompanying the distemper has a peculiar character, I am decidedly of opinion that there is no specific remedy against this complaint: and it is better to point out the indications of cure, than to enumerate a long list of medicines with their respective doses,

the selection of which must depend on the circumstances of each individual case."

I am not aware of any other remedies worth notice, though a great number might be added, if we could give credit to the stories retailed by dealers in Dogs, as well as gamekeepers and huntsmen. Much will be found to depend on good nursing, and particularly to prevent the animal from taking cold. From what I have witnessed of Blaine's medicine, I should not recommend it.

It is very advisable to inoculate for the distemper. If you can meet with a Dog already afflicted, take a little mucous from his nose, and insert it up the nostrils of your whelp, after having prepared him by a dose or two of syrup of buckthorn; if the animal does not take the disease, repeat the operation. By inoculating for the distemper, the disease will be as much less severe, as the inoculated small pox compared to what is called the natural mode of taking it.

A Dog rarely, if ever, has the distemper twice; nor does it often attack him after he has attained the age of two years; but frequently makes its appearance before the animal has reached his twelfth month. A notion became prevalent a few years back, that by inoculating a Dog with the cow pock, the distemper would be prevented.

Johnson's Shooters' Annual.

Other recipes:—

"One ounce of flour of sulphur, and half an ounce of antimony, mix them well together in paste of lard or butter —give a lump of this about the size of a nutmeg, in the early stage of the disease, every morning, to be increased and lessened in proportion as the disease advances or decreases, in the animal.

The Dog should be housed while giving this medicine.

From one teaspoon full to one tablespoon full of antimonial wine, according to the age of the subject. In less than two hours, the medicine will begin to operate, and the disease partly or wholly removed immediately afterwards; should it continue the day after, the same dose may be repeated.—*Am. Turf Reg. and Sport. Mag.*

HYDROPHOBIA.

Not one Dog in twenty, reputed mad, is so in reality—the cure, or rather the prevention, therefore, is certain in many instances; and where it happens otherwise, and the Dog was labouring under the hydrophobia, the result is most melancholy; but then it is immediately and unblushingly asserted, that the medicine had not operated in a proper manner—it had not remained upon the stomach, or been taken in sufficient quantity; and thus the cheat continues, though on a much more circumscribed scale.

The fact is, that the only certain remedy hitherto discovered for this dreadful disease, is the application of the knife:—the blood becomes infected by the saliva from the dog's teeth; and unless the bitten part can be immediately cut out, death will most likely be the result, though the precise time will be very uncertain; for so capricious is this malady, that, after infection, it sometimes lies dormant, as it were, in the system for months, sometimes for weeks; while instances, I believe, are not wanting, where it has appeared in all its terrible symptoms in the course of a few days.

It is possible that a person might be bitten by a mad Dog, and yet escape the hydrophobia: if, in the act of biting, the animal's teeth pass through a thick woollen coat, or other garment, so that his teeth in passing through are wiped dry, he might inflict a wound without any of the infectious saliva or fluid reaching it.

Respecting the bite of a mad Dog, Dr. Vandeburgh very judiciously observes:—"Not a moment should be lost to destroy the poison from the wound (even if only on supposition of the animal being mad;) many remedies are recommended, but should not be trusted to; the only effectual method is to destroy the foundation of the poison, and give the following course of medicine:—the part bitten must be entirely cut out with a sharp instrument, and the edges of the wound seared with a red-hot iron, to prevent the smallest particle of poison remaining; afterwards, warm poultices of oatmeal and water to be applied as hot as the patient can possibly bear, to produce a quick and copious discharge of matter or suppuration: The following pills should be given:—

Calomel, one scruple,
Opium, half a scruple,

well mixed and divided into ten pills of equal size, one pill to be taken every four hours; two drachms of strong ointment of quicksilver to be well rubbed in on the thighs and arms, morning and evening, which, with the medicine, must be continued till the mouth becomes sore and spitting is produced; when matter discharges from the sore, it should also be dressed with strong ointment of quicksilver, thickly spread on lint, and the poultice continued over it: this treatment must be pursued for the space of one month, then the wound healed with *Turner's cerate* spread on lint, but the mouth kept sore and slight spitting prolonged for at least two months, as hydrophobia has been known to make its appearance five and six months after the bite of the animal: sea-bathing is strongly advised; but I would always recommend the foregoing treatment in preference, a

trial of which should not be omitted, if the poison was destroyed at first by cutting; neither if the bite has happened some time, nor even when the following symptoms have taken place: the part bitten becoming tender and inflamed, uneasiness and stupidity, frightful dreams, convulsions, eyes red and watery, pain all over the body, difficulty in swallowing, great thirst, and when liquid is only brought before the patient he appears choked, accompanied with trembling and shivering over the whole body; vomiting bile frequently occurs, attended with great thirst and fever: the last symptoms are raging and foaming at the mouth, spitting at the bystanders, and strong convulsions, as if drawn double;—no patient should be given over till the last moment: the mercurial friction should be tried, and the prescribed medicine given while he exists, as there is hope of recovery by perseverance in the foregoing method.

"The patient should be kept on very low diet, and no spirits or wine be used."

The following are the progressive symptoms of hydrophobia: when a Dog becomes melancholy, droops his head, forbears eating, seems to forget his former habits, and as he runs snatches at every thing: if he often looks upwards, and that his tail at its setting on be rather erect, and the rest of it hanging down; if his eyes be red, his breath strong, his voice hoarse, and that he drivels and foams at the mouth, you may be satisfied of the approaches of hydrophobia; and the only thing that should be done is instantly to despatch him, however great a favourite he may be. If at this period he should remain at liberty, he will certainly leave his home: he goes as fast as he can; and the mischief that may happen, owing thus to a mad Dog breaking away, and running over an extent of country, is incalculable, as he spares no living creature.

The following accurate description, from the pen of Mr. Youatt, appeared in the Sporting Magazine, September, 1825:—

"The symptoms of rabies in the Dog are the following, and nearly in the order in which they usually appear:—An earnest licking, or scratching or rubbing, of some particular part; sullenness, and a disposition to hide from observation; considerable costiveness and occasional vomiting; an eager search for indigestible substances—as bits of thread, hair, straw, and dung; an occasional inclination to eat its own dung, and a general propensity to lap its own urine. The two last are perfectly characteristic circumstances. The Dog becomes irritable; quarrels with his companions; eagerly hunts and worries the cat; mumbles the hand or foot of his master, or perhaps suddenly bites it, and then crouches and asks pardon. As the disease proceeds, the eyes become red; they have a peculiar bright and fierce expression; some degree of strabismus or squinting very early appears; not the protrusion of the *membrana nictitans*, or haw, over the eye, which, in distemper, often gives the *appearance* of squinting, but an actual distortion of the eyes; the lid of one eye is evidently more contracted than the other: twitchings occur round that eye; they gradually spread over that cheek, and finally over the whole face. In the latter stages of the disease, that eye frequently assumes a dull green colour, and at length becomes a mass of ulceration.

"After the second day, the Dog usually begins to lose a perfect control over the voluntary muscles. He catches at his food with an eager snap, as if uncertain whether he could seize it; and he often fails in the attempt. He either bolts his meat almost unchewed, or in the attempt to chew it suffers it to drop from his mouth. This want of power over the muscles of the jaw, tongue, and throat, increases, until the lower jaw becomes dependent, the tongue protrudes from the mouth, and is of a dark and almost black colour. The animal is able, however, by a sudden convulsive effort, to close his jaws, and to inflict a severe bite.

"The Dog is in incessant action: he scrapes his bed together, disposes it under him in various forms, shifts his posture every instant—starts up, and eagerly gazes at some real or imaginary object: a peculiar kind of delirium comes on: he traces the fancied path of some imaginary object floating around him: he fixes his gaze intently on some spot in the wall or partition, and suddenly plunges and snaps at it; his eyes then close, and his head droops; but the next moment he starts again to renewed activity: he is in an instant recalled from this delirium by the voice of his master, and listens attentively to his commands; but as soon as his master ceases to address him, he relapses into his former mental wandering.

"His thirst is excessive, (there is no hydrophobia in the Dog) and the power over the muscles concerned in deglutition being impaired, he plunges his face into the water up to the very eyes, and assiduously, but ineffectually, attempts to lap.*

"His desire to do mischief depends much on his previous disposition and habits. I have known it not to proceed beyond an occasional snap, and then only when purposely irritated; but with the fighting Dog the scene is often terrific. He springs to the end of his chain—he darts with ferocity at some object he conceives to be within his reach

* In those instances of hydrophobia which have fallen under my notice, I have never observed the dog "plunge his face into the water up to the very eyes, and assiduously, but ineffectually, attempt to lap." On the contrary, the animal has always been capable of lapping, and has testified no symptoms of horror or disgust at the sight of fluids: however, in the disease called *Dumb Madness*, I have noticed symptoms similar to the above.

—he diligently tears to pieces every thing about him; the carpet or rug is shaken with savage violence; the door or petition is gnawed asunder; and so eager is he in this work of demolition, and so regardless of bodily pain, that he not unfrequently breaks one or all of his tushes. If he effects his escape, he wanders about, sometimes merely attacking those dogs which fall in his way; and at other times he diligently and perseveringly hunts out his prey: he overcomes every obstacle to effect his purpose; and, unless he has been detected in his march of death, he returns in about four-and-twenty hours, completely exhausted, to the habitation of his master.

"He frequently utters a short and peculiar howl, which, if once heard, can rarely be forgotten; or if he barks, it is a short, hoarse, inward sound, altogether dissimilar from his usual tone.

"In the latter stages of the disease a viscid saliva flows from his mouth, with which the surface of the water that may be placed before him is covered in a few minutes; and his breathing is attended with a harsh grating sound, as if impeded by the accumulation of phlegm in the respiratory passages.

"The loss of power over the voluntary muscles extends after the third day throughout his whole frame, and is particularly evident in the loins; he staggers in his gait; there is an uncertainty in all his motions; and he frequently falls, not only when he attempts to walk, but when he stands balancing himself as well as he can. On the fourth or fifth day of the disease he dies, sometimes in convulsions, but more frequently without a struggle.

"After death there will invariably be found more or less inflammation of the mucous coat of the stomach; sometimes confined to the rugæ, at other times in patches; generally with spots of extravasated blood, and occasionally intense, and occupying the whole of that viscus. The stomach will likewise contain some portion of indigestible matter, (hair, straw, dung,) and occasionally it will be completely filled and distended by an incongruous mass. The lungs will usually present appearances of inflammation, more intense in one, and generally the left lung, than in the other. Some particular points and patches will be of a deep colour, while the neighbouring portions are unaffected. The sublinqual and parotid glands will be invariably enlarged: and there will also be a certain portion of inflammation, sometimes intense, and at other times assuming only a faint blush, on the edge of the epiglottis, or on the rima glottidis, or in the angle of the larynx at the back of it."

When the human species become unhappily the subjects of this calamity, though in particular instances some variation may be observed, yet the first symptoms are generally the same; these are torpid disquietude in the wound, (or seat of injury,) attended with slight intervening itchings, ultimately amounting to pain, and much resembling rheumatic affection. It continues to extend itself to the surrounding parts; and, at length, from the extremities it expands its poisonous power to the viscera; the cicatrice, if there has been a wound, begins to swell, inflammation hourly increases, till, at length, a serous bloody ichor is discharged, and this alone may be considered the primary and invariable prognostic of certain hydrophobia. These leading symptoms soon become progressively general, bearing with them every appearance of confirmed rheumatism; they are fluctuating, quick, acute, and of the spasmodic, convulsive kind; they suddenly attack the patient, severely affecting the head, neck, and principal joints; a dull, drowsy pain often seizes the head and neck, breast, abdomen, and even vibrates along the back bone. The patient is gloomy and inclined to solitude, murmurs much, seems lost in reflection, is forgetful, inattentive, and prone to sleep; at times agitating starts denote the mind to be disordered; by turns he is attentively watchful; his slumbers become disturbed, and suddenly awaking from those, convulsive appearances soon follow.

A deafness is sometimes complained of, the eyes are watery; the aspect sorrowful; the countenance pale, and the face contracted: sweat breaks out about the temples; an unusual flow of saliva, slimy and viscid, at length comes on with a dryness of the fauces, a foulness of the tongue, and a disagreeable smell (or rather fetid effluvia,) from the breath. As the symptoms already recited increase, the second stage advances: a fever commences, which at first is mild, but makes with gigantic strides the most rapid advances to extremity; it is accompanied with hourly increasing horrors, and all the alarming concomitants of mental derangement. Wakefulness becomes perpetual; violent periodical agitations ensue; the mind is evidently more and more disturbed; a delirium follows, at which critical moment an invincible aversion to *fluid, glass,* or any polished or shining body is plainly perceived. A constriction of the gullet takes place, and an incredible difficulty of swallowing ensues; liquids are offered, and are attempted to be taken, but the disgust and loathing become so predominant, that they are most violently declined; and this symptomatic dread and aversion so wonderfully increases, that, upon the very appearance of any watery fluid, the greatest horror comes on, and the most shocking muscular distortions ensue; if the liquor is attempted to be forcibly pressed upon them, the experiment is rejected by an instantaneous succession of the most horrid gesticulations, and convulsive distortions, in which every ray of reason seems to be absorbed. Upon a temporary cessation of so distressing a paroxysm, the poor unhappy patient now murmurs, mourns,

and groans most miserably; loses, by degrees, all knowledge of his dearest friends and most familiar acquaintance: and their presenting themselves before him, is the very critical moment when all of this description give proof of their desire to bite, which, in the attempt, bears no ill affinity to the similar snappings of a village cur.

Awful to relate, reason returns at intervals, and he feelingly laments his own calamity, and deplores his own incapacity. A consciousness of approaching dissolution is perceptible even to himself, and he seems truly resigned to the singularity of his fate. Severe pain and consequent heat producing thirst, a desire to drink is displayed, but nature shrinks from her office; in vain the patient raises his hand to touch the vessel, it almost magically produces instant tremor—the hand recedes, and he sinks into the most afflicting despondency. Conscious, likewise, of his constantly increasing inclination to bite, he, in his rational moments, makes signals to warn his friends of the danger, and keep themselves at a distance. Towards the conclusion of this dreadful and most melancholy scene, the fever and parching thirst increase, the tongue becomes swelled and protruded, foam issues from the mouth, strength fails, cold sweats come on, the stricture on the breast increases, as well as the other predominant symptoms, until, in a long succession of convulsive struggles, all-powerful death closes the scene.

The cause of the hydrophobia is utterly unknown; and its effects hitherto appear to have baffled every remedy which has been tried for its removal. Copious and repeated venesection was, a few years ago, announced to the world as a cure for the hydrophobia, and instances were given in order to confirm it: it is true, they came in a questionable shape on account of the distance they had to travel, being chiefly from the East Indies: however, the method just mentioned, has been tried in this country and found unavailing.

The *alisma plantago* was introduced as a remedy, but, on repeated trial, has proved ineffectual.

Another remedy has been introduced. This new remedy comes from a distance; but let us not reject it merely on that score. The account has appeared in several medical works, and was first published, it seems, by *Dr. Muller*, of Vienna, a scientific physician, now resident at Paris. The German physician says, he received the particulars from M. Marochetti, a Russian surgeon, who informed him, that, during his residence in the Ukraine, in the year 1813, he was called on to attend *fifteen* persons who had been bit by a mad dog, when some old men requested him to treat the unfortunate people according to the directions of a neighbouring peasant, who had acquired a great reputation for curing the hydrophobia. M. Marochetti allowed the peasant to attend *fourteen*, reserving one to himself, a female of sixteen, who was cauterized and treated in the usual way, and expired *eight days after the attack*. The peasant gave to the fourteen persons placed under his care a strong decoction of the tops of the flowers of the *yellow broom*, (a pound and a half a day.) He examined twice a day the under part of the tongue, where he had generally discovered little pimples, containing, as believed, the hydrophobic poison: these pimples really followed, and were observed by Marochetti himself. As they formed, the peasant opened them, and cauterized the parts with a red hot needle; after which, the patients gargled with the decoction mentioned above. The result of this treatment was, that the fourteen patients were cured, having only drank the decoction for six weeks. Marochetti then states, that, five years afterwards, he himself had an opportunity of giving this treatment another trial. Twenty-six persons who had been bitten by a mad dog, were put under his care, viz: nine men, eleven women, and six children: he ordered the decoction of the tops of the flowers of yellow broom to be given them as soon as possible; and upon an attentive examination of their tongues, he discovered pimples on five men, three children, and all the women. Those who were most wounded were afflicted on the third day: the others on the fifth, seventh, or ninth. One of the women who had been slightly bitten in the leg had no appearance till the twenty-first day. The seven who were free from pimples took the decoction of broom for six weeks, with success. M. Marochetti thinks that the hydrophobic poison, after having remained in the wound, fixes itself under the tongue, in the orifices of the ducts of the submaxillary gland, which are situated on the sides of the frænum. The inflammation of which the little pimples are the result, has a peculiar appearance. The time in which these pimples appear, is generally between the third and ninth day after the bite. If they are not opened before twenty-four hours after their appearance, the venom is absorbed, and the patient is lost.

Dumb Madness.—Upon the disease, erroneously denominated Dumb Madness, I will relate what fell under my own observation, and from which a tolerable idea of the disorder may be formed:—"In the month of May, 1823, a pointer whelp was presented to me by a friend, which I knew to be as well bred as any in the kingdom, and on that account, I, of course, prized him more highly. The Dog was whelped on the 16th of April, of the same year; and as soon as I received him, a kennel was appropriated for his use in the open air, well littered with wheat straw, and kept clean. He had full liberty, and a clear stream of water close at hand, to quench his thirst whenever he thought proper. The Dog, as might be expected, was remarkably healthy; and, at seven months old, had become an amazingly fine animal: at this period, he experienced a

slight attack of the distemper, which immediately gave way to bleeding and a dose of tartar emetic; and in three or four days he was restored to perfect health. His colour was a perfect jet black; he was larger than common, and altogether, the finest young pointer I ever saw. On the 8th of January, (of the following year,) I observed the Dog keep his mouth almost continually open, the inside of which appeared darker coloured than usual, and somewhat swelled. I immediately bled him copiously, which, however, produced no visible alteration; on the contrary, the next day all the symptoms had evidently increased, and I observed that he was unable to swallow, though he made many attempts both to eat and drink, particularly the latter: but the water or the milk, which, by putting his nose into the vessel, he contrived to get into his mouth, uniformly run out again, and he appeared utterly unable to pass it down his throat: he licked his fore-legs very much, and seemed to have a trifling discharge of mucus, or saliva: but all this time the Dog appeared not only perfectly sensible, but even in good spirits, and evidently experienced but little pain. A sporting acquaintance, who saw him, said the disease was what was distinguished by the appellation of *dumb madness*, which seems to me altogether a ridiculous term; and supposing this to have been the disorder with which my Dog was affected, I can testify that the term is very improperly applied, as the animal in question regularly barked on the approach of a stranger, though in a different tone, and with more difficulty than usual. However, I immediately searched authorities for *dumb madness*, with a view to ascertain the proper mode of treatment. In an old writer, (the author of the "Gentleman's Recreation,") I found it thus described:—"The Dog that is troubled with dumb madness will not feed, but holds his mouth *wide* open continually, putting his feet to his mouth frequently, as if he had a bone in his throat." Now, though my Dog kept his jaws somewhat distended, his mouth was not *wide* open, but only partially so, and that he was able to shut it I can safely attest, as I saw him many times close his jaws, though he never kept them more than a second or two in that position; further, the animal frequently licked his fore-legs, but I never saw him raise his feet, or otherwise use indications similar to those adopted by a Dog when he seems to have a bone in his throat; and therefore the cases did not appear to agree.

I had next recourse to the "Sportsman's Dictionary, or Gentleman's Companion:" the third edition of which was published in 1783, which contained the following observations:—"Dumb madness *lies in the blood*, and causes the Dog not to feed, but to hold his mouth always wide open, frequently putting his feet to his mouth, as if he had a bone in his throat."

To be brief—I perused every thing within my reach, on the subject of Dogs and their diseases, but without gaining the least information; and, as the disorder, at least in the form in which it presented itself, was new to me, I began to entertain fears for the life of my Dog, and the sequel will prove they were but too well founded. I have already remarked, that I first perceived the disease on the 8th of January, and the Dog continued much in the same way for four successive days, during which, all his faculties appeared very little, if at all, impaired. He would follow me into the field, and even hunt, frequently attempting to drink, and, in order to accomplish that desirable object, would thrust his nose into the water, instead of attempting to lap; but he never succeeded in forcing any of the fluid down his throat: his sense of smell was as perfect as ever; and, indeed, though he evidently became very lean, he might be said to be in good spirits till the morning of the 13th, when I found him very languid, his eye had lost its lustre, and death was evidently fast approaching. He was perfectly sensible, and whenever I approached and spoke to him, he raised his heavy eyes, and by these, as well as by the movement of his tail, appeared grateful for my attention. Towards the evening he made a last effort to swallow food, but was not able. On the following morning he was stretched on his side, and had every appearance of death, only that a breathing, at very long intervals, proved that the vital spark was not absolutely extinct. Some few hours afterwards he was perfectly lifeless; and I was resolved, if possible, to ascertain the cause of his death. For this purpose, I called in the assistance of a skilful veterinary surgeon, and the animal was dissected in my presence. On opening the body, it was abundantly evident that the Dog had been starved to death; or, in other words, had died for want of food. The lungs, the liver, and, indeed, all those parts of the animal organization, were totally unaffected, and manifested not the slightest symptom of disease; the same remark will equally apply to all parts of the throat, and also to the brain; and the only affection that could be discovered, was in the salivary glands, which were triflingly swelled. On the whole, I feel a perfect conviction, that the disorder of the Dog was a glandular affection, which, by rendering him incapable of swallowing sustenance, caused his death.

Of the cure, should a similar case come under my observation, I feel confident; and I have been thus minute for the information of sportsmen in general, particularly as I have been informed, that the disorder which I have attempted to describe, or something very much resembling it, has carried off, within the last few years, great numbers of valuable dogs. Should a similar case occur with any of my Dogs, I should force food, (nourishing broth,

for instance,) down the throat, with an instrument adapted for the purpose; and if I found it impossible to get it down, I would inject it into the bowels, when a sufficient quantity would be taken up by the absorbents, to sustain life till the disease of the glands abated. In the first place, I should feel a disposition to bleed the afflicted animal, as this would prevent any super-abundant pressure of blood upon the parts affected, which I might perhaps rub well with mercurial ointment.

It is a lamentable fact, that so little attention has been paid to the diseases of this invaluable animal, though no creature which has yet been taken under human protection affords so good an opportunity for observation, or is so much entitled to the assistance and kind offices of its master. The Dog has become a domestic of the most familiar description, whose greatest delight is in administering to the pleasures of the sportsman, or those by whom his services are called into action; his civilization may be said to proceed in the precise ratio with that of human nature, and he uniformly takes his tone from the circumstance or the situation of his master. As he has closely associated himself with man, therefore, he has brought upon himself a train of diseases, resulting from his artificial mode of life; and from which, in a state of nature, there is little doubt, but he is altogether exempt. In fact, living under the same roof, and in the same manner, as his master, he seems to be afflicted something in the same way; and, upon close examination, it will be found, that many of his disorders bear a strong resemblance to those in man, and would, I have little doubt, give way to a somewhat similar treatment. Thus circumstanced, it seems unaccountable that the medical treatment of this faithful creature should have been so neglected. Generally speaking, whenever a Dog is attacked with any disease, little trouble is taken in his recovery; food is offered him, and if he is able to eat it and recovers, it is all right; but it very frequently happens, that the moment he exhibits symptoms of indisposition, he is suspected of hydrophobia, and, without any attempts to alleviate his pains, he is placed in a situation of security, and either suffered to pine away, or is prematurely despatched. This may not apply altogether to sportsmen, perhaps; though many of these, I have not the least doubt, pay but little attention to the matter.—*Johnson's Shooter's Companion.*

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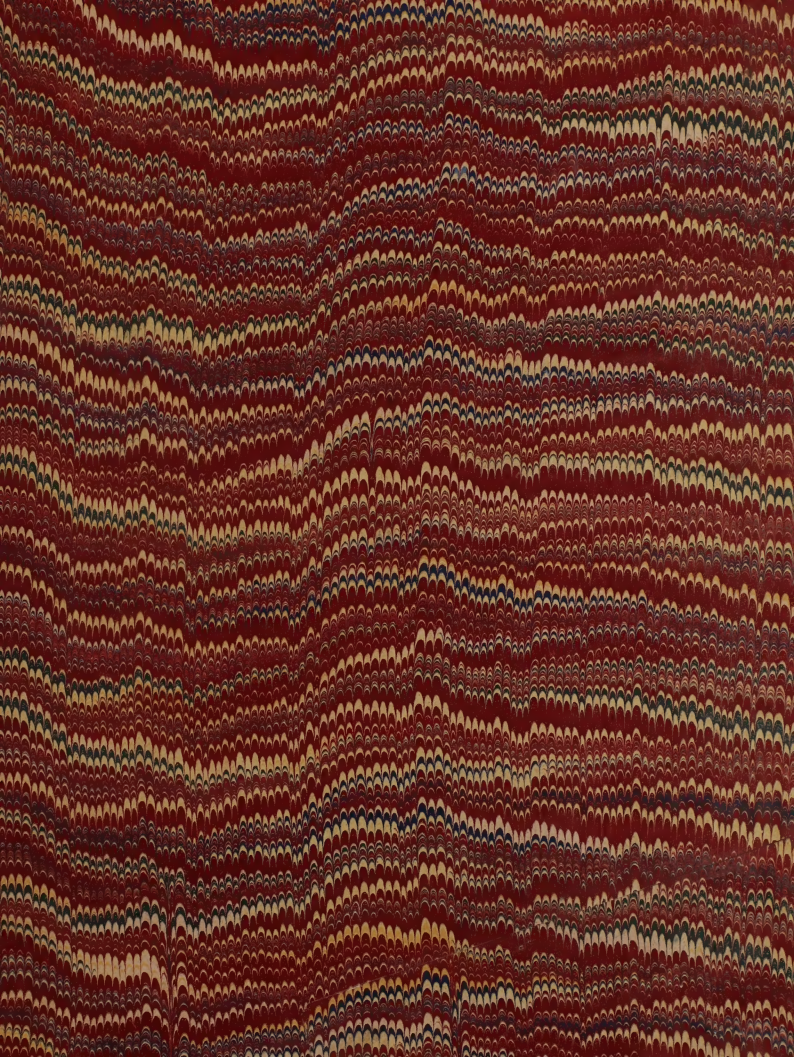
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